## 

**SNEAK PREVIEW:** 

Stunning Low-Cost Printers from Apple StyleWrite: Spectacular

• STYLEWRITER: Spectacular

output for \$599

• Personal LaserWriter LS:

Laser performance for \$1,299

6 FAX MODEMS: Clear choices for sharp faxes

• 10 FIX-IT SECRETS:

Easy ways to reduce your repair bills

16 LASERJET OPTIONS:
 Connecting
 Macs to HP

printers

02579

## You do it by th



## inking small.



When we introduced Microsoft Word six years ago, we weren't planning on making history.

We had just

one goal, and a fairly simple one at that: to make a word processor that

suited people's needs.

Then again, we knew that the people we wanted to suit were a wildly diverse, independent lot: Mac users. So it made sense to let them tell us exactly what to put into Word.

Which they did.

First, there were some folks who didn't like tabbing much. Fair enough. For them, we developed Tables—an easier way to set up side-by-side paragraphs, columns of numbers, even forms. No tabs. No hassle.

Then we heard from a few more people. "The Tables gig is working," they said. "Now, about this text-numbers-graphics combo all in

one document..."

We made that simple with "warm links." Once you've linked Microsoft Excel data to a document, keeping that document updated with the latest Microsoft Excel figures is easy. Just click your mouse.

Then there were those senders of mail, who didn't want to click-click-click-click. So we built support for Microsoft Mail right into Word. Now, with just a click, everyone stays in the loop. And work in progress *stays* in progress.

Apparently, listening to what people want is a pretty good way to

design software.

How else can we explain Word 4.0 being the most popular word processor in Mac history?

And those cards and letters are still coming. "Listen," someone'll say. "In case you guys are working on the next Word..."

Which we are. In fact, if you've got some input for us, feel free to drop us a line. Or if you'd like to find out more about Word, call us at (800) 541-1261, Dept. N26.

Our goal is still simple: to make Word the best word processor around. With the latest technology—translated into human terms, of course.

After all, we're only making history because we make word processors the way you like 'em.



# don't become the most popular word processor in Mac history by thinking big.



## MacUser

#### **MAY 1991**

Volume 7 Number 5 Cover photo by Steve Underwood



Apple's two new budget printers bring high quality to new lows — low prices, that is.

> 137 Color gear: monitors. display cards, and printers



348 John C. Dvorak is excited about boredom.





51 What's new from off the beaten trackball?

#### **Features**

#### **Personal Best: Two New Apple Printers**

BY HENRY BORTMAN AND JON ZILBER

Need a budget printer? Apple's shapely new inkjet printer -the \$599 StyleWriter — boasts high-resolution output, a tiny footprint, and TrueType software for the end of the jaggies. Or for \$1,299, consider the Personal LaserWriter LS, which brings laser power within more budgets. Find 

#### Mailin Fast, Full-Featured Fax Modems

BY OWEN W. LINZMAYER

AND THE MACUSER LABS STAFF

The marriage of the Mac and the facsimile machine has become one of the basic fax of life for business communications. Smudgy faxes are history when you use one of these six incredibly sharp fax modems. ..... 104

#### **Printing from Mac to LaserJet**

BY JOHN RIZZO

What's the best printer bargain available? The one you already own. For those who already have an HP LaserJet for a PC or compatible computer, here are 16 low-cost products to make it compatible with the Mac, complete with PostScript and network capabilities. ..... 120

#### **Buyer's Guide**

#### Color Gear ......137



#### Mac San The Perfect Image: **True-Color Displays**

DD BY ANDREW EISNER

AND THE MACUSER LABS STAFF

For full-color beauty in the eye of the beholder, cast your baby blues on one of these 20 photo-realistic color monitors. Today's 24-bit displays start at less than \$1,700, and MacUser Labs can help you pick the right one. ..... Buyer's Guide 4



#### Macism Easy Hard Copy: nn Color PostScript Printers

BY PAUL YI AND THE MACUSER LABS STAFF

Color printers are better than ever — sharper, faster, cheaper — but are they good enough yet? MacUser Labs tests a field of five to assess the state of the art. ..... Buyer's Guide 38

#### **MiniFinders**

#### **Hardware**

More than 200 Mac products in seven hardware categories reviewed and rated. .... 277



Sections	Reviews
Red-hot and new: the fastest accelerators ever, QMS' megaprinter, Sony's Vbox VCR interface, FWB's Hard Disk Toolkit, and a bevy of new mice and trackballs. Plus news, updates, and more	Ventura Publisher Macintosh Edition A new option for long-document processing in mixed Mac/PC operations
Designing for Fax  Dress up your faxes with these special type and graphics techniques expressly tailored for finicky fax machines and fax modems. 201	LabVIEW 2 National Instruments' slick software for using lab instruments and analyzing the data with your Mac — withou doing any programming
Integration Connect your Macs to midrange IBM computers for terminal emulation, file transfer, and printing, with a variety of hardware and software	Tempo II Plus and QuicKeys 2 Two utilities make it easy to automate repetitive commands or sequences at the touch of a key
Recognize network problems by testing your network when it's healthy — so you can pinpoint trouble as soon as it starts	complete Mac security programs. A.M.E. delivers powerful protection — at a price
Power Techniques For when your Mac gets sick, here are ten fix-it-yourself tricks	Publish It! Easy: Easy word-processing, graphics, page- layout, and presentation capabilities, all in one package Evolution: The best value for font conversion. MIDIplay Your applications come alive with the sounds of music— thanks to this utility. PlayMaker Football: Get off the couch, and become the coach! Stratego: The Computer Game: The classic board-based war game has been brought to the Mac.
The Expert's Edge The only thing worse than following these seven steps to	Departments
Power Programming Got an idea for a Mac program? Here's how to find the specialized talent that can turn your idea into smooth-running code. 259	Jon Zilber Meet the Multiple Masters of the font universe 25 Robert R. Wiggins It's time to switch to the active voice
Tip Sheet How to launch programs on a single-floppy-drive Mac without switching disks, use a Mac with two monitors, disable Adobe Type Reunion temporarily, and more tips from readers	Guy Kawasaki Some Prodigal advice on dissent45  John C. Dvorak Multimedia! Prepress! Animation! So what?348
Help Folder What to do when your Apple menu starts flashing off and on, how to hide files from view, a program that deliberately interrupts your work, and more	Letters Readers opine on sexism, lies, and video displays 13 Advertiser Index

## WORD PAGEMAKER MACDRAW II MACWRITE II USERS:

#### **BUY A CAT!**



Preferably a **CHESHIRE** cat.

Because with Cheshire on your Macintosh you can create and edit business charts right in your documents.

Easily. In seconds.

Without the hassle of switching to a separate charting package.

You get over 20 great looking b&w bar, column, line and surface charts. Plus the ability to add more anytime.

Here's a purrrrfect deal!

Call 800.255.6227, or 800.334.4444 or 800.248.0800 today and buy Cheshire. You'll get 24 hour service, a terrific discount, overnight delivery and a 30-day money back guarantee!

**Questions?** Call us anytime 800.552.9157 or 914.747.4171

#### **ABBOTT**SYSTEMS

© 1991 Abbott Systems Inc. All rights reserved. All trademarks are the sole property of their respective owners.

Please circle 129 on reader service card.

#### MacUser

#### Group Vice President and Publisher

J. Samuel Huey

#### Editor

Jon Zilber

#### Associate Publisher

Jonathan A. Lane

#### Editorial

Executive Editor James S. Bradbury Managing Editor Nancy Groth Technical Director Henry Bortman Senior Editors Aileen Abernathy, Russell Ito, Rik Myslewski, Lee Thé Technical Editor John Rizzo Assistant Managing Editor Claire Hamilton Chief Copy Editor Eva Langfeldt Associate Editors Susan Janus, Bruce Mewhinney, Victoria von Biel, Kelli Wiseth, Paul Yi Senior Copy Editor Rhoda Simmons Copy Editor Mary Cole Assistant Editor Michele Stokol Research Assistant Darryl Chan Administrative Assistant Nancy Peterson Contributing Editors Steven Bobker, Thom. Hogan, Andy Ihnatko, Guy Kawasaki, Bob LeVitus, Kurt W. G. Matthies, Salvatore Parascandolo, Dave Peltz, Winn L. Rosch, Michael Swaine, Kathleen Tinkel, Kurt VanderSluis, Gregory Wasson Contributing Business Editor Robert R. Wiggins Contributing Anti-Editor John C. Dvorak Assistant to the Editor Teresa Molina

#### MacUser Labs

MacUser Labs Director Andrew Eisner
Associate Director Jeffrey S. Pittelkau
Project Leaders Paul R. Freedman, Stefan
Lipson, Jeffrey K. Milstead, Stephan Somogyi
Lab Technicians Tony A. Bojorquez, Rohan
Mahy, Anthony Stoltz
Network Administrator Romel Solis

#### Design

Art Director Lisa Orsini
Associate Art Director Diane Dempsey
Photo Editor Peter Alan Gould
Art Production Manager Jan McKenzie Rogers
Technical Illustrators K. Daniel Clark,
Mark W. Sweeney

#### Advertising/Sales

Advertising Sales Manager Lee Uniacke

#### Production

Production Director Carlos Lugo
Production Manager Brenda Falco

#### Marketing

Marketing Manager Vickie Welch
Marketing Development Manager Steve Fricke
Promotions Coordinator Shannon Malliet

#### Operations

Group Business Manager Rosemarie Carbone Group Creative Services Director Cynthia Ahart

#### On-Line/Zmac

Manager, On-Line Services Ben Templin

Founding Publisher Felix Dennis

#### Ziff-Davis Publishing Company

President Eric Hippeau

Executive Vice President J. Scott Briggs
Group Vice President, Macintosh Publications

J. Samuel Huev

Group Vice President, Direct Publications
James Stafford

Senior V.P., Marketing Paul H. Chook

V.P., Operations Baird Davis

V.P., Controller Howard Sckolnik

V.P., Business Manager T. L. Thompson

V.P., Circulation Bert Lacy

V.P., Circulation Services James Ramaley

V.P., Creative Services Herbert Stern

V.P., Marketing Services Ann Pollak Adelman

V.P., Production Roger Herrmann

V.P., Research Marian O. White

V.P., Europe Frank Kelcz

V.P., Asia-Pacific Alan Power

Vice Presidents Bill Machrone,

Claude P. Sheer, Ronni Sonnenberg

Executive Director, Information Systems

John Helliwell

Executive Director, Ziff-Davis PC Network

Tony Uphoff

Director, Business Development

Steve Rosenfield

Director, Corporate Development Jeff Weiner Director, Sales Training Dan Leonetti Director, Classified Sales Paul Stafford Director of Planning Gary A. Gustafson Production Director Walter J. Terlecki Director, Licensing Jean Lamensdorf

#### Ziff Communications Company

Chairman William B. Ziff, Jr.
Vice Chairman Philip B. Korsant
President Kenneth H. Koppel
Executive Vice President Philip Sine
Senior Vice President Hugh Tietjen
V.P., General Counsel, and Secretary
J. Malcolm Morris
V.P., Controller, and Treasurer

Patrick J. Burke, Jr.

V.P., Electronic Editorial Director Michael Kolowich

V.P., Chief Information Officer
Thor Olson

V.P., Human Resources Rayna Brown Vice Presidents Seth R. Alpert, Steven C. Feinman, William L. Phillips

#### Circulation

Subscription Director Charles Mast Single-Copy Sales/Marketing Director

James E. Gerth

Business Director Becca Hoblin Customer Service Michael Cronan

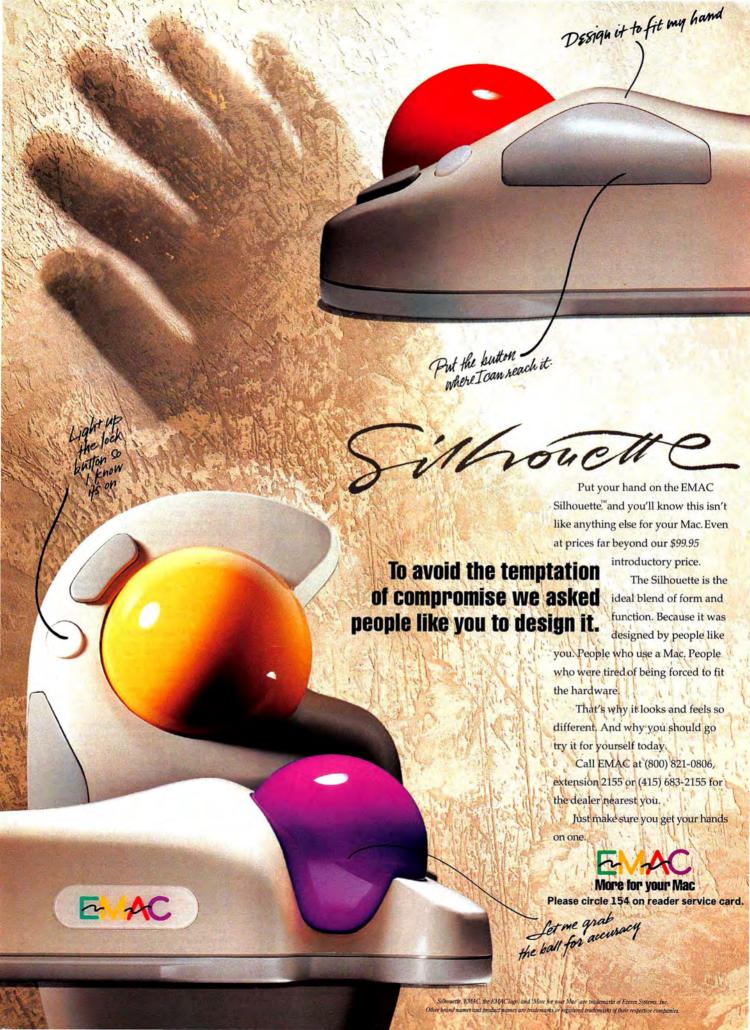
Entire contents © 1991 Ziff-Davis Publishing Co., a division of Ziff Communications Co. All rights reserved; reproduction in whole or in part without permission is prohibited. MacUser is a registered trademark of Ziff Communications Co. MacUser is an independent journal, not affiliated in any way with Apple Computer, Inc.

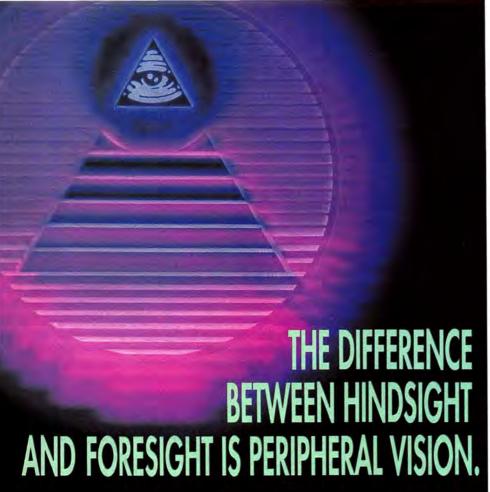
**▼BPA** 



Printed in the U.S.A.

In Memory of John J. Anderson 1956 – 1989 and Derek Van Alstyne 1967 – 1989





When your hard drive fails, hindsight will tell you that you should have gotten it from a company that can replace it fast.

But foresight says that it's best to prepare for the moment of truth. And it's wise to select a company that replaces its drives in 48 hours or less.

Because every day your storage system is down...is a very long day indeed.

At Peripheral Vision, we counsel our customers on how to save data before and after the inevitable crash. And we consider the service we provide every bit as important as the equipment we sell.

Yet we sell the very best. In fact, our high capacity 350 mb, 650 mb, and 1.2 gb drives are so reliable, they're warranted for five years.

If you're looking for an unbeatable combination of high quality technology and service at great prices-including our 45 mb removable, DAT and tape backups—we're just a tollfree call away. Call Peripheral Vision at 1-800-800-7868.

#### PERIPHERAL VISION STORAGE SYSTEMS

We take the long-term view.

Please circle 63 on reader service card.

CALL 1-800-800-7868

#### MacUser

#### **How to Reach Us**

#### **GO ZMAC**

If you're a CompuServe subscriber, you can reach us on Zmac, the on-line service for MacUser. Just type GO ZMAC, or look elsewhere in this issue for information on how to sign up.

#### **Product Announcements and Updates**

Please send your letters or press releases about new products or upgrades to Michele Stokol, Assistant Editor, MacUser, 950 Tower Lane, 18th Floor, Foster City, CA 94404.

#### Help Folder

If you've got a Mac question or problem, send it to Help Folder, c/o MacUser, at the above address, or for a personal answer to your problem, type GO TECHSUPPORT on Zmac. You should also take advantage of local user groups. You can find the one nearest you by calling Apple toll-free at (800) 538-9696, ext. 500.

We love getting tips from our readers. Send your tips to Tip Sheet, c/o MacUser, at the above address, or type GO TECHSUPPORT on Zmac. We can't print every tip, but we'll try our best to pick the most interesting ones for publication.

#### **Calling All Programmers**

We'd like to hear from any programmer who is interested in contributing to our utilities disk or labs-benchmark disk series. If you're interested, contact Michele Stokol at the above address.

#### Writing for MacUser

If you have an idea for an article you'd like to write, we'd like to hear about it. Send a query letter with samples of your writing (published, if possible) to Nancy Peterson, Administrative Assistant, MacUser, at the above address, or type GO MACUSER on Zmac. No calls, please. We rarely buy unsolicited manuscripts, so don't send us a completed article without writing to us first. Allow four to six weeks for a reply.

#### Permissions and Reprints

Material in this publication may not be reproduced in any form without permission. Send permission requests to Chantal Lavelanet and reprint requests to Claudia Crichlow, Ziff-Davis Publishing Co., a division of Ziff Communica-tions Co., One Park Ave., New York, NY 10016.

#### **Complaints About Advertisers**

MacUser's editors are not responsible for the content of the advertisements in the magazine. However, if you bought a product advertised in MacUser, are dissatisfied, and can't resolve the problem, write to Advertising Department, MacUser, 950 Tower Lane, 18th Floor, Foster City, CA 94404. Include copies of relevant correspondence, and please be as specific as possible.

If you want to subscribe to MacUser, have a question or complaint about your subscription, or are moving, call or write MacUser. P.O. Box 56986, Boulder, CO 80321; (800) 525-0643 or (303) 447-9330 (outside the U.S.), or type GO SUBSCRIPTIONS on Zmac. New subscriptions and address changes take six to eight weeks. For back issues (subject to availability), send S7 per issue, \$8 outside the U.S., to Back Issues Department, Ziff-Davis Publishing Co., P.O. Box 53131, Boulder, CO 80322. MacUser (ISSN 0884-0997) is published monthly by Ziff-Davis Publishing Co., a division of Ziff Communications Co., One Park Avenue, New York, NY 10016. Editorial Offices: 950 Tower Lane, 18th Floor, Foster City, CA 94404. Telephone: (415) 378-5600. U.S. subscription rates are \$27 for 12 issues, \$45 for 24 issues, and \$62 for 36 issues. Additional postage for Canada: Add \$18 per year to the U.S. rates for surface mail. Single-copy price is \$2.95 (Canada, \$3.95). Canadian GST registration # pending. POSTMASTER: Send address changes to MacUser, P.O. Box 56986, Boulder, CO 80321. Second-class postage paid at New York, NY 10016, and at other mailing offices.

## Don't Keep The Power Of Your Network Bottled Up.

#### ETHERNET ELIMINATES NETWORK FRUSTRATIONS FOR MACINTOSH USERS.

If you're still trying to run today's high-performance applications on LocalTalk, you're not getting all the power and productivity they can deliver. Because Ethernet has over 40 times the bandwidth of LocalTalk, it makes QuickMail quicker, 4th Dimension faster and the daily frustrations of resource and file sharing for Mac users on your network a thing of the past.

#### ETHERPORT CONNECTS MACS TO ETHERNET.

EtherPort is the original high-performance Ethernet controller board for the Mac SE, SE/30 and II series that's become the standard of reliability in nearly 100,000 installations worldwide. Compatible with AppleTalk Phase 1 and 2, TCP/IP and DECnet, EtherPort boards are available with either thick and thin Ethernet ports, or thick and twisted-pair ports. So you can choose a full-fledged Ethernet network or low-cost, easy-to-install LattisNet.

#### SHIVA — THE EXCLUSIVE ETHERPORT SOURCE.

You responded so well to our acquisition of FastPath 4 from Novell, we've agreed to acquire EtherPort, too. As part of the Shiva family of multi-platform Ethernet solutions, both products are backed by the same commitment to support and enhancement that's made Shiva *The* Network Communications Company. Watch for EtherPort boards for the new Mac LC and IIsi, as well as other improvements, coming soon. And call now for complete information about EtherPort and other Shiva products. **1-800-458-3550.** 

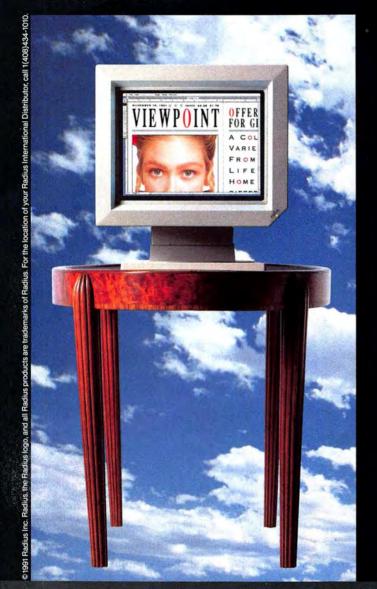
617-252-6300.

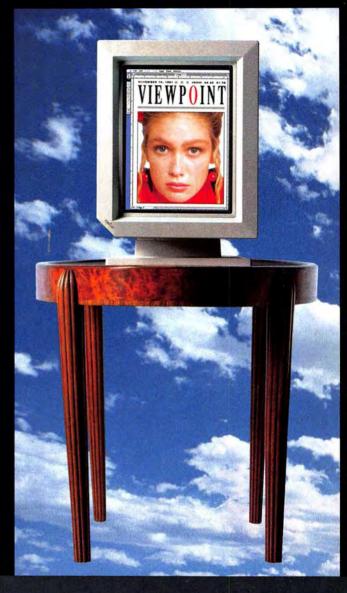
Ether Port

The Network Communications Company\*
One Cambridge Center, Cambridge, MA 02142

All product names are trademarks of their respective manufacturers.

## radus

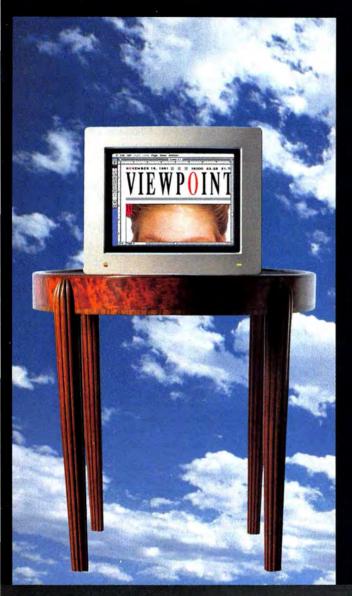


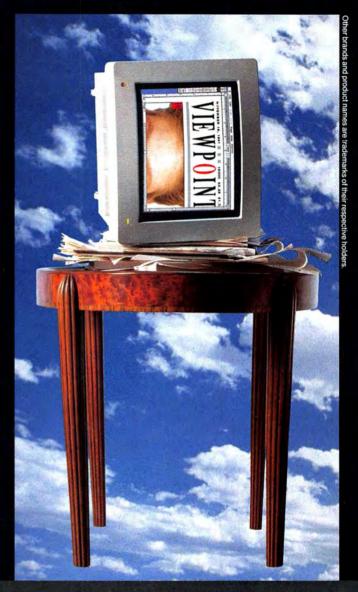


#### HE NEW COLOR PIVOT SHOWN IN LANDSCAPE AND FULL-PAGE MODE.

The comparison you see above is really no comparison at all. • If you live in a world where things are all middle with no top or bottom, or where the year has only six months, you might choose the Apple. But if you would

like to see a full page of color graphics, and see twelve months of spreadsheet instead of merely six, and be able to go from portrait to landscape with swift and deft ease, and own the only color full-page display on the





#### The Apple 13" Shown In Landscape And...Uh...Paperweight Mode.

market, you will probably choose the Color Pivot. Okay, you will definitely choose the Color Pivot. The Color Pivot is compatible with all color capable Macs. And on the Mac IIsi and IIci with built-in video, the Color

Pivot needs no interface. But when all is said and done, perhaps the best thing about the Color Pivot is that, well, it's a Pivot. • For more information, or the location of your nearest Radius reseller, call 1 (800) 227 · 2795.

Please circle 142 on reader service card.

## Plug this in... Supercharge all your hard drives.



Hard drives are a major performance bottleneck – they slow down your applications. Our new SCSI PowerCard" breaks the bottleneck. It effectively supercharges SCSI hard drive performance by speeding up your application's disk intensive tasks!

#### A Hard Drive Computer

The SCSI PowerCard is a computer on a NuBus card with processor, memory, DMA and caching software.

The large SIMM buffer temporarily stores megabytes of hard drive data and provides just what your application calls for... instantly! That's not all, the onboard CPU relieves the Mac of time consuming I/O management – leaving more time for you to work!

#### **World's Fastest Performance**

The SCSI PowerCard works with all standard SCSI hard drives, including optical, CD-ROM and SyQuest." It's so powerful that even slow optical drives can perform disk intensive tasks faster than a Wren-Runner II"—the world's fastest hard drive.

#### **Applications Run Faster**

The SCSI PowerCard can boost productivity within any application. DTP and pre-press users can scroll, paint and modify images up to three times faster. Software developers can compile application code in half the time. It even triples the speed of many database functions. Or, plug it into a file server – multiuser applications can run up to four times faster!

#### **Turn To DayStar Digital**

When it comes to performance, we are the upgrade company. Things have never been easier.

Come join us.

1-800-962-2077 Ext 760





Dealers please circle 159 on reader service card.

5556 Atlanta Highway, Flowery Branch, GA 30542, (404) 967-2077, Fax: (404) 967-3018 This ad created on a Mac with DayStar's 50MHz PowerCard 030 and SCSI PowerCard. Other brands and product name are trademarks or registered trademarks of their respective holders Product specifications are subject to change without notice. (1989-04 Eughar Digital, Inc.)

Users please circle 160 on reader service card.

## **MacUser**

#### **Tough Choices**

hat do MacUser, soccer, and chamber music have in common? Susan Janus, that's what. As MacUser's new reviews editor, Susan has the arduous task of sifting through the flurry of press releases and new products that descend on the magazine's offices each month. Choosing what's hot enough to review in MacUser requires instinct, experience, a stroke of inspiration, and a touch of mental anguish, reports Susan.

"Fortunately, I have help when I need it. We have a meeting of MacUser minds at least once a month to hash out what's new and

important in Macdom, so I get to draw on the expertise of the entire editorial staff to assist me in making some of the toughest choices."

Before joining MacUser in January, Susan spent three years at MacUser's sister publications PC Week and PC Computing. However, she's no stranger to the Mac.

"In fact, I cut my computing teeth on the very first Macintosh, back in 1984. I still have a copy of the original Microsoft Word 1.0, which is fast becoming a collector's item. I also have



Our new reviews editor, Susan Janus, knows what plays well with Mac users — and what doesn't.

fond memories of PageMaker 1.0 — remember when system crashes were a way of life and text wrap was just a glimmer in Aldus' eye?"

What can make the job of reviews editor at *MacUser* so excruciating is the sheer number of innovative products the Mac platform inspires each year. "When I worked on the PC side of the industry, it was clear that most of the exciting new product developments in the Windows environment were inspired by the Mac. So it feels great to move to where most of the leading-edge ideas actually originate — in the Mac market," says Susan.

When she's not assigning and editing product reviews, you might find Susan picking turf out of her teeth ("I play in a very competitive, in-your-face soccer league — it keeps me tough enough to defend myself when a product gets a bad review") or relieving the tension of magazine deadlines with her violin and passion for chamber music.

What's on Susan's agenda for MacUser reviews?

"As reviews editor, I'll be continuing the broad product coverage that's kept *MacUser* readers informed on everything from the esoteric to the mainstream. One area I'll be watching closely is workgroup applications—software designed from the ground up for networked users collaborating on a project. This area will be key to keeping the Mac competitive in the 1990s. Since every Mac is shipped network-ready, I expect to see the most innovative development in this area happening first on the Mac. I've already taken a peek at prerelease versions of several cutting-edge products due to be released by this summer, so stay tuned."

## Unlocking Corporate Data

ORACLE for Macintosh gives users direct access to PC, mini, and mainframe databases.

We all remember 1984, when Macintosh promised to put the power into the hands of the rest of us.

Well, it's taken six years, but the door to the corporate vault is open.

Now, the full power of corporate data is easily accessible to anyone with a Macintosh. More specifically anyone with Macintosh and ORACLE.®

Using ORACLE for Macintosh, Mac users can now point and click their way into, around and out of just about any mainframe, mini, workstation or PC database. That includes any data stored in DEC's RMS, IBM's DB2 and SQL/DS.

They can do it without the limits of Mac-only databases or the masquerade of terminal emulation. In fact, they can do it right from their favorite Mac programs like Microsoft Word and Excel. And they can do all this without compromising the systems administrator's control over access and security.

As for Macintosh developers, ORACLE lets them work in flexible programming environments including HyperCard, SuperCard, PLUS and Acius's 4th Dimension. To name a few. And all Oracle products are backed by a 30-day money back guarantee. As well as the largest database service and support organization in the world.

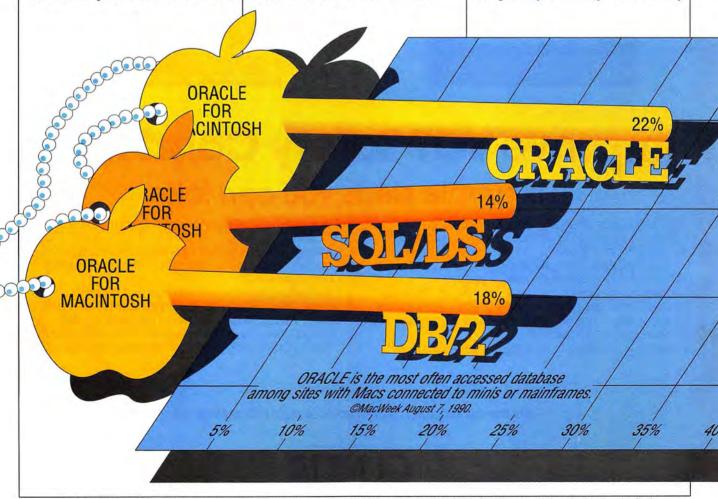
Call us at 1-800-633-0516 Ext. 7611 for ORACLE for Macintosh or ORACLE for 4th Dimension.

Or sign up for an Oracle Client/Server Forum in your area.

At last, Apple's promise has come to fruition.

#### ORACLE

Compatibility · Portability · Connectability







### Improve VDT Safety Conditions

#### Six simple steps you can take.

At Curtis, we've been saying it for years. In San Francisco, it's the law. Use ergonomic accessories to improve computing comfort and safety.

- 1. Relieve eyestrain and fatigue, cut glare 95%, and absorb 98% of VLF radiation with a Curtis Glare Filter.
- 2. Relieve tired, aching wrists and organize your desktop with the Curtis Keyboard Organizer.
- 3. Keyboard at a more comfortable height—install a Curtis Keyboard Spacesaver.
- 4. Reduce eye fatigue—use a Curtis Clip to hold copy

and eliminate constant refocusing from desktop to

5. Position and adjust monitor to optimum viewing angle with a Curtis Monitor Arm—arm and platform both swivel 360°.

6. Improve monitor viewing comfort instantly with a Curtis Tilt & Swivel or Curtis Universal Monitor Base.

Don't take chances with your health and safety—start using Curtis accessories today. Write or call for your free "Tips to Computing More Comfortably" brochure.

For the Curtis dealer nearest you call (603) 532-4123 Ext. 43



30 Fitzgerald Drive, Jaffrey, NH 03452

Macintosh and Macintosh SE are registered trademarks of Apple Computers Inc.

© Curtis Manufacturing Company Inc.





William Kuentzel stirred up a hornet's nest with his February letter alleging sexism in a recent Microsoft ad. The ad showed a large office full of Macs, where the men worked mainly at Mac IIs and women were using SEs. Stuart R. Dole of Petaluma, California, agreed that "There's a message here somewhere . . . maybe women are worried about the larger ELF and VLF emissions of the Mac II monitors, but they don't know it comes out the back?" On the other hand, Kraig M. Kasten, of Beaver Dam, Wisconsin, says, "Get a life! If you have so much free time to 'count the objects,' volunteer it to a worthy cause!"

₩ Write to Letters to the Editor, c/o MacUser, 950 Tower Lane, 18th Floor, Foster City, CA 94404, or post your letter on the MacUser Forum of Zmac, our on-line service.

All letters become the property of MacUser, and we reserve the right to edit any letters we print. Please include a return address and a daytime phone number.

#### **Backdoor Macs**

Guy Kawasaki really hit my desk accessory ("The Stealth Mac," February '91, page 41). How to sneak a Mac into a midsized government agency (approximately 15,000 employees)? Bury the computer police in a paper blizzard. It takes perseverance and a couple of trees to convince them that you think the way they do.

We learned that two words — functional requirements — reach deep into their psyche and, if the situation is handled diplomatically, can legitimize the purchase of a handful of offbrand computers. Six of us compiled a list of more than 250 functional requirements for our jobs as public-affairs specialists. Surprise! The Mac could handle 100 percent of our work — DOS was a distant second at 60 percent.

Dan Himsworth Bozeman, MT

This letter is about getting Macs into DOS workplaces. I work for an electric company that is 100-percent DOS brainwashed. But it bought a fully equipped SE/30 and a IIfx for one of my projects — thanks to HyperCard and SuperCard and, of course, my astute application of them. In short, I sold the software, not the machine. Naturally the machine had to follow to make the software work.

The company had a database of sample data, but the numbers alone were useless. We needed graphics to show how the samples related to each other. Such phrases as "The database must have editable-graphics capabilities" did the trick. By editable graphics I meant that the program must be able to edit drawings without making users exit from it. This, I reasoned, was needed because it would waste time and effort to have to be constantly moving between programs. Which was true. We had a ton of work to do and little time to do it.

You can get Macs into the land of DOS with applications that only Macs can run. Stuff such as word processing and spreadsheets won't do it — but stuff requiring rapid-fire graphics might.

Bill D. Johnston Cary, NC

**G**uy Kawasaki's "The Stealth Mac" column ends with the statement "a writer is supposed to portray things as they should be—not as they are."

His vision of the way things should be includes nine recommendations to lie and six ways to threaten lawsuits — in a column that's only 19 paragraphs long!

Where do Apple employees learn their ethics? Could the difference between the Mac and IBM PCs be the result of bad karma?

Milo Balboa Island, CA

I looked in vain in Mr. Kawasaki's February article for evidence of tongue-in-cheek writing as he advised lying, misrepresenting, faking, and the like in order to sneak Macs into a

#### Dear Mr. Sculley . . .

If the Apple Portable proved anything, it's that you can't be too specific about your wish list. Who'd have thought that it would be important to say, "We want a portable Mac that isn't too heavy to carry from one end of O'Hare to the other and that you can still see when a flight attendant turns off the cabin lights." When Apple gets around to unveiling a notebook Mac, wouldn't you rather not be disappointed?

#### Speak Up: What features should Apple include in a notebook Mac?

MacUser, 950 Tower Lane, 18th Floor, Foster City, CA 94404.

In October we polled for suggestions on what John Sculley can do to earn his salary — reported to be the highest of any computer executive. The answers were varied, but none of them beat Mr. Sculley's own: He's taking a self-imposed pay cut this year.

John Schubert, of Coopersburg, Pennsylvania, answered February's question of how Apple should provide direct support for its customers by first pointing out existing weaknesses. "The product can be baffling, the owner's manual is incomplete or cryptic, and your retailers are a bunch of crass goons." The answer? — "The interim solution is to help the individual customer. The long-term solution is to use customer-support problems as a database to fix the underlying problems. Accordingly, Apple should rotate product managers, technical writers, and sales managers from its customer-support telephone bank."

Barry Cohen of Brooklyn, New York, points his finger first at the computer buyer: "The real problem with the dealer channel is its unwillingness to pay for the services we require. Computers have become commodities like staplers and paper clips. Commodity products are sold at commodity prices, with a low profit margin for the dealer and little room for support services. We aren't willing to pay for dealer services by paying a higher price for the products or by buying service contracts."

## \$\$\$\$\$1/2

### Correct Grammar Rated Top Grammar Checker

- MacUser Magazine

NEW Correct Grammar 2.0 now checks style too!



Sometimes you get so involved in your writing that mistakes slip by you.

You can catch the wrong spelling with your spelling checker. But other mistakes have been tougher to catch—until now.

Now there's Correct Grammar for the Macintosh. It works like your own personal editor to correct mistakes in grammar, style, punctuation, usage...even spelling.

Instantly, it identifies inconsistencies, split infinitives, awkward phrases, wordiness, cliches and other fine points of style. Then it suggests how you can correct them.

You can make the correction with a click of the mouse, leave it alone, or rewrite the sentence your own way. If you wish, Correct Grammar will explain the grammatical rule that applies. So you can learn more about good grammar every time you write.

Guaranteed to catch 95% of your grammatical and spelling mistakes—or your money back! Works with all popular word processing programs. System requirements: Macintosh with 1MB of RAM and hard disk. System Version 4.2 or higher. Suggested Retail Price \$99.

Order from your favorite software dealer.
Or call direct: 1-800-543-3873



LIFETREE SOFTWARE 33 New Montgomery St., San Francisco, CA 94105 415-541-7864

**UEM005** 

#### **LETTERS**

company already set up with PCs. He certainly ruined his credibility as far as I'm concerned.

Unfortunately, there probably will always be smoothies who, on the surface, appear to be upstanding citizens while inwardly they are rotten to the core. When a judge was about to sentence a con man who had swindled many people out of large sums of money, he asked him, "John, how could you take advantage of those fine people who trusted you so much?" John looked the judge straight in the eye and said, "Judge, if they don't trust you, you can't swindle them."

Ernest Taylor

Winston-Salem, NC

I thought that my tongue wasn't in my cheek—it was poking through. I'll have to be less subtle in future columns, although of all things, I have never been accused of being subtle.

I believe that all people wear a moral beeper on their hip. We should try to get Macintoshes into our businesses but not set off these beepers.

By the way, Apple is not responsible for the development of my ethics. My parents and my wife are. I'm sure they would be happy to discuss them (or lack of them) with you. — GK

#### **The Big Picture**

Thanks so much for the article on full-page monitors ("Picture-Perfect Portraits: Full-Page Displays," February '91, page 176). As a Mac Plus owner for just one year, I've already grown tired of scrolling around as I'm working. I've been told by several local dealers that a Plus can't support using a larger screen. I read your article late at night and couldn't wait for morning to call the numbers you listed. Upon further investigation and a call to Mirror Technologies (Roseville, Minnesota; [612] 633-4450), I ordered a two-page monitor that will let me view programs in landscape and portrait modes.

Being what I like to call "computer stupid," I've only skimmed MacUser in the past. But now I find it's as easy to read as a Mac is to learn. I must admit, though, that I had to ask my secretary what WYSIWYG stood for.

William J. Farquharson Duxbury, MA

#### **Know When to Folder**

l enjoy Thom Hogan's column but have a correction to the one printed in February ("Happy Birthday," page 297). He says that programs should save preference files in a Preferences folder in their System Folder but that no applications currently do this. Two of my frequently used programs do actually use a Preferences folder. I suggest that you give kudos to Aladdin for StuffIt and to CE Software for DiskTop. StuffIt also generates other folders such as Help, Translators, and Viewers.

Harmon B. Abrahamson Grand Forks, ND

CE gets an A, and Aladdin gets a B—. Creating three new folders with generic names in the System Folder is a no-no unless it's something other applications can use, such as Help or Preferences. Aladdin should create a Stufflt or an Aladdin folder for its Translators and Viewers.—TH

#### **Speedy Optical Drives**

In the audio section of your excellent multimedia report ("The MacUser Multimedia Encyclopedia," February '91, Buyer's Guide page 38), you state that erasable optical discs "would prove attractive if access times could be improved substantially" and refer interested readers to an optical-drive lab report in your November '90 issue ("Erasable Optical Drives," page 102), where you first noted their inability to handle the required access-speed needs of direct-to-disc recording and audio editing.

Oddly enough, when I received your November issue, I also received my direct-to-optical-disc Akai DD-1000 audio recorder/editor (International Music, Fort Worth, Texas; [817] 336-5114.) Our studio has since been recording and editing 16-bit CD-quality stereo audio with this system, which incorporates a standard Sony optical drive. It uses removable 650-megabyte cartridges.

The Akai DD-1000 seems to have no trouble with the optical drive's access time. It provides instant playback of any edited sound and equally speedy management of edit-decision lists. I never have to wait to hear playback, even if I'm assembling cuts from several different sound files. Best of all, Akai has selected the Mac as its computer interface.

Joe Van Riper Charlotte, NC

The Akai product is a specialized \$13,500 subsystem that uses a hefty 1-megabyte RAM cache. This speeds things up considerably.

In general, sound professionals' needs



## SQUEEZE MORE FILES INTO YOUR HARD DRIVE.

Double your disk capacity for only \$229\* with DoubleUp\* from Sigma Designs.

DoubleUp compresses any data, image, or application file — so fast you'll hardly notice it happening. You *will* notice your disk capacity expand, by 100% or

even more. It's like doubling the number of hard drives in your system for only \$229.

DoubleUp comes with DiskDoubler™ software for user-

friendly operation, and a

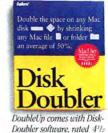
The secret to DoubleUp's speed is in this card — it gives you real-time compression & expansion. That means you get your files when you want them — at the click of a mouse!

Macintosh NuBus card for unbeatable speed. So you can work with files the way you usually do, even after they're compressed. And data is never lost or altered.

How did we squeeze so many features into DoubleUp

at such a reasonable price? To find out, call 1-800-933-9945 today for the name of your nearest authorized Sigma Designs dealer.





mice by MacUser

46501 Landing Parkway • Fremont, CA 94538 • TEL: (415) 770-0100 • FAX: (415) 770-0110



For
TIFF, Targa, & Scitex File Formats
Sublimation Dye Printers
Electrostatic Plotters
Color Laser Copiers
Film Recorders

Print PostScript® language files on a wide range of printing and imaging devices with Freedom of Press® Professional. Generate variable resolution raster data output files from PostScript language input in monochrome or color (up to 32 bits/pixel).

Call us or ask your dealer for all the printers, film recorders, and file formats supported by Freedom of Press Professional.

Freedom of Press® Professional
For Macintosh, PC, and many UNIX platforms

1-800-873-4367

Custom Applications Inc. 900 Technology Park Drive • Billerica, MA 01821 508-667-8585 • FAX: 508-667-8821

Freedom of Press is a registered trademark of Custom Applications Inc. PostScript is a registered trademark of Adobe Systems, inc Product names are registered trademarks of their manufacturers

Please circle 40 on reader service card.

#### LETTERS

are driving magneto-optical-drive evolution rapidly. For example, another audioproducts company, Eltekon (Livonia, Michigan; [313] 462-3155), has rewritten the firmware and software of the same Sony drive that Akai uses and claims a transfer rate of about 309 kbps and access times of around 26 milliseconds — even without resorting to RAM caching. — LT

#### **DOS-Chauvinist Mail**

The main impediment to Mac users' taking advantage of the lowest-cost mailing offered by the U.S. Postal Service is that it won't accept Mac database disks unless they're in a specific DOS format. Why this blatant discrimination? The postal service claims there is not enough demand for a Mac option.

Mac users should be able to use this free upgrade to the ZIP+4 personal-mail lists. The Mac community should write to the postal service and their elected representatives if no action is taken. If all Mac database users would send the postal service a MAC address list in ASCII and request the advertised ZIP+4 free upgrade, we would make an impact and have our mail sent at the lowest possible cost—just as DOS users can do right now.

Niles A. Carter Austin, TX

#### Share and AppleShare Alike

I challenge Henry Bortman's statement in the January '91 Bridges column (page 215) that "Mac users want file servers to look and act like AppleShare servers." Apple, not Mac users, wants file servers to look and act like AppleShare.

We want a file server that is either much easier to use — especially for file transfer — or that has much-more-sophisticated security. Some say that AppleShare provides easy file transfer, but I think TOPS, from Sitka, best meets these needs. Also, most mail packages let users transfer files painlessly. Neither of these methods requires an AppleShare interface.

On the other hand, network managers want mainframe-quality security and file management—especially multiple levels of security (not just groups and users); a way to automatically maintain past file revisions; and a way to access two accounts simultaneously from the same server.

David Medberry Layton, UT

You've got a point. Although we could debate whether AppleShare or TOPS provides an easier interface for the casual user, you'll get no argument from us about AppleShare's shortcomings in the security department. — HB

#### Safe Spin

Your excellent coverage of removabledata-storage disk drives and the benefits they offer Mac users ("Portable Secure Unlimited-Storage Cartridge Drives," February '91, page 206) contained some errors that might confuse readers.

The first issue is the hardware levels of SyQuest drives. Although a small number of revision 3 and revision 4 drives had performance problems, these occurred only when the drives shared the SCSI bus with a noisy scanner. We took immediate steps to fix the problem. The article's author was in error when he attempted to tie this issue to microcode levels.

SyQuest takes its obligations seriously. If users call our technical-support staff at (415) 226-4280 and their drive shows symptoms that are consistent with a noisy peripheral bus, SyQuest will simply exchange the drive.

However, more than 95 percent of all revision 3 and revision 4 drives have performed flawlessly. Since your article appeared, only six SyQuest drives have been returned because of this problem.

Linking the indicator color to the drive level can also confuse the reader. The worldwide change to orange was made more than a year ago to comply with the European safety standards that reserve red only for dangerous situations. All SyQuest drives have an orange indicator, and no changes are anticipated.

Joel Levine Vice President Marketing SyQuest Technology Fremont, CA

We were in close contact with SyQuest for this report, but somehow we received some wrong information. We have no reason to doubt that the indicator light shows only drive activity and not revision level. Note that even if the version number of the drive contains the characters F5E, there is no guarantee that the drive is part of the problematic revisions. — AE

#### **Hard Drive, Soft Rating**

I am at a loss to understand your rating of the CMS MacStack SD45RM in your February review of cartridge drives ("Portable Secure Unlimited-Storage Cartridge Drives," page 206). Overall our drive scored very well in your tests. Your evaluation praised the good software and

#### To be the Mac-to-PC networking standard, you have to offer more equipment. MacTOPS and DosTOPS Not-So-Standard Feature Mac-to-PC Connectivity Send and Receive Files Share Printers Translate Application Files Free Electronic Mail Easy to Install and Use No Need to Update Existing Mac Hardware Friendly, Knowledgeable Technical Support Works on 1 Mb Macs

We designed MacTOPS™ and DosTOPS™ to meet the changing needs of your workgroup. And in the process, we've become the leader in mixed networks. Our reliability has been tested and proven by an installed base of 600,000 users worldwide. Making us the choice of 9 out of 10 Mac-to-PC users.

Like Garry Frenkel of PC Week, who calls MacTOPS and DosTOPS "... a complete networking solution...documentation is superlative...an excellent choice for those who want to get involved in some serious networking." Plus, Sitka\* products have been honored with Network Computing's first-ever Well-Connected Award in December, 1990, the LAN Times Readers' Choice Award 1990, a Publish! Readers' Choice Award and a Macworld Magazine

World Class Award.

Our comprehensive network includes true Macto-PC two-way file sharing, so files created on either computer can be shared by both. With print spooling that lets you keep working while your document prints. And MacTOPS comes with data file translators to translate files to and from different formats, such as Microsoft Word to Word Perfect or dBASE to Excel. We've also included a free copy of our InBox™ e-mail system—the application network users request most.

What's more, we support our not-so-standard standards with a complete family of networking products. Like our FlashCard™ interface boards for PCs, which allow any PC to participate in the network regardless of its bus interface-AT/XT, MCA, or Toshiba.

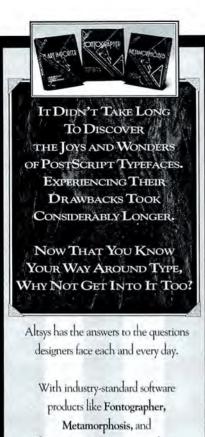
So don't wait for next year's model. Call your local dealer today! Or order from Sitka directly by

calling 1-800-445-TOPS, ext. 107. Because your standards can never

be too high.







products like Fontographer,

Metamorphosis, and

The Art Importer, we provide you with the ability to alter existing fonts, develop new ones, or utilize original art as a type element for use in virtually any publishing or drawing program.

Now you have a creative center in-house with type options for body copy, headlines, and logotypes galore. You're only limited by time and your own ability to create what your mind knows to be stellar.



To Learn More About Altsys Software Solutions, See Your Dealer or Call Us@ 214 680 2060, Ext. 687.

> WHEN YOU NEED MORE THAN A PRETTY FACE, WE'RE JUST YOUR TYPE.

Please circle 394 on reader service card.

#### LETTERS

excellent documentation. You also gave positive marks for the drive's metal cabinet, UL approval, and auto-switching power supply. Yet we received only two and a half mice, which tied for the lowest rating in your article.

The only negative comment concerned our list price. Your chart shows \$1,399, but we have retailed for \$999 since early January '91. Quoted retail prices are close to meaningless for firms that sell only through resellers, because dealers demand certain points off retail and then sell at dramatic discounts.

In your previous comparison reviews, I have always clearly understood some relationship between the article and the final ratings — not this time.

Karl Seppala Director, Apple Products CMS Enhancements Irvine, CA

Our speed tests for all SyQuest-based cartridge drives produced similar results, so performance differences had only a minoreffect on ratings. The CMS MacStack SD45RM, despite its above-average speed, was faulted for having internal SCSI termination and DIP switches (instead of push-wheel or thumb-wheel controls) to set SCSI ID —neither are easily manageable by the average user.

The list price of \$1,399 (which we considered high in the absence of features such as auxiliary AC outlets) was confirmed by CMS in late September '90. We're pleased that the price has been reduced—so pleased, in fact, that we've raised the CMS MacStack SD45RM's rating to three mice in this month's MiniFinders.

We agree that list prices can be misleading. Beginning in March, we started including "street" prices from across the country whenever possible, as a free market-research service. — BM

#### Safe at Any Speed

In January's "Thoroughly Modern Modems" (page 100), you reviewed 2,400-bps modems with error-correction and data-compression protocols. Can any of the 9,600-bps modems that use V.42/V.42bis use their correction and compression schemes at 2,400 bps when communicating with the modems you reviewed? If so, it means more justification for upgrading to the 2,400-bps modem with those protocols.

Doug Ivison Westport, CT All the 9,600-bps units known to us use error control and compression at 2,400 bps as well as at 1,200 and 9,600 bps.
— SS

#### **Upgrade Inflation**

I have a couple of clarifications to Ken Gruberman's review of MacProteus, the music-sampling synthesizer on a NuBus card (February '91, page 54).

When you refer to a device incapable of sampling, a better term might be *sample* playback instead of *sampling*.

Also, Ken might be paying for his upgrades on Mark of the Unicorn's Performer too often. I bought Performer 2.2 in May '88 for \$395. There were free upgrades on version 2.2. The version 3.0 upgrade appeared in the summer of '89 for \$95, and it had two free upgrades. In fall '90, I got the version 3.5 upgrade for \$69.

Each paid upgrade of Performer added new features and enhanced an excellent program. I found it to be money soundly invested.

Larry Mueth Fenton, MO

#### A Talking Dog

Your review of Spyglass Dicer (February '91, page 60) accurately described the program and raised issues that we addressed in our latest free upgrade.

But we regret that you did not discuss the program's significance. It lets scientists visualize volumetric data on a personal computer in seconds, using inexpensive, interactive software that requires neither formal training nor programming. In fact, Spyglass Dicer is the only such application — as opposed to a programming environment — available on any computing platform. When you find a dog that talks, you should express some amazement at its ability before correcting its grammar.

Our users confirm that Spyglass Dicer has changed the way they do science. I think your readers should bear that in mind as they consider your comments.

Brand Fortner

Director of Research and Development Spyglass

Champaign, IL

Spyglass Dicer is a revolutionary product—and indeed, so is the entire Spyglass line. Spyglass has brought mainframe capabilities to the Macintosh, but changing platforms also changes the user's requirements. Although a supercomputer is used only for computationally intensive

## SORRY, CLARIS. BUT IT'S DEJA V VER AGA

THE NEW CANVAS™ 3.0 MACDRAW® PRO

Another new model year. And Canvas is still miles ahead.Lucky you. With brand new models of both the world's top-ranked drawing programs to choose from, Simultaneously,

And MacDraw® Pro isn't a bad try. In fact, it reminds us of another drawing program we've always had the utmost respect for: Canvas 2.1.

Unfortunately for Claris, our new Canvas 3.0 includes enough major enhancements to leave their latest effort idling somewhere back in the dust. Again.

Let's take a look under the hoods. Canvas 3.0 gives you more high-end text handling features. Like binding to curves. Slanted margins. Textwrapping outside - and/or inside - irregular objects, and full kerning & tracking control. Even conversion of PostScript® Type 1 fonts to customizable Bézier outlines.

MacDraw Pro doesn't.

Canvas 3.0 gives you more technical drawing features. Like custom dynamic hatching. Custom parallel lines & curves. Custom dashed lines, curves & borders. Automatic dimension lines. Area & perimeter calculations. And a

Smart Mouse™ drawing aide. MacDraw Pro doesn't.

Canvas 3.0 gives you more design/illustration features. Including unparalleled Bézier curve editing power--from multi-point selection & editing to automatic object conversion, combining and blending. Magnetic guidelines. Center line auto tracing of scanned images. And full bitmap editing in 24hit color

MacDraw Pro doesn't.

Canvas 3.0 also gives you new built-in translators for important multi-platform formats like CGM, IGES and DXF™. And Open Architecture technology — allowing new tools, effects and translators to be added with ease at any time.

MacDraw Pro doesn't.

You are what you drive. Like Canvas 2.1 before it, the new Canvas 3.0 was developed in direct response to the wish lists of thousands of

drawing professionals. Its

heritage of performance is proven. Its price is right. And its ease of use is legendary. Which leaves just one last question. If what you draw is important to you, why settle for Claris's sedate sedan when you can get your hands on a dream machine?

#### Note to Canvas Users:

Registered users who purchase Canvas 2.1 between Jan 1, 1991 and May 31, 1991 qualify for a free upgrade to Canvas 3.0. All Canvas 2.1 users who purchased prior to Jan 1, 1991 can upgrade to the new version for only \$99 US. Canvas 1.0 or 2.0 users may upgrade for only \$129 US. Prices valid through Aug 1, 1991. Allow 4-6 weeks for delivery. All orders add \$10 shipping & handling. International Users: Please

contact your local authorized

Trading up's so easy to do. But only for a limited time.MacDraw users: Trade up now to the new Canvas 3.0 for just \$149 US. Just call 1-305-594-6965 and ask for Dept M. (Have your MasterCard, VISA or American Express card number & expiration date ready!) Or mail your MacDraw® program disk to the address below, along with your credit card information or check drawn in US dollars on a US bank. Offer limited to the US and Canada, and ends Aug 1, 1991.

distributor for availability details.

Please circle 185 on reader service card.

3305 NORTHWEST 74TH AVENUE MIAMI, FL 33122 PH: (305)594-6965 FAX: (305)477-5794

All illustrations were created and color-separated using Canvass<sup>TM</sup>. Canvas 3.0 List Price: \$399 @1991 Deneba Systems, Inc. Canvass<sup>TM</sup> and Smart Mouse<sup>TM</sup> are trademarks of Deneba Systems, Inc. MacDraw<sup>®</sup> is a registered trademark of Claris Corporation. PostScript<sup>®</sup> is a regis tered trademark of Adobe Systems Incorporated. DXF<sup>™</sup> is a trademark of AutoDesk Inc.

#### Why Sensible Grammar<sup>\*</sup> is first in its class.

Now anything you write, from a business letter to an annual report, can be stronger and clearer. With Sensible Grammar.™A professional proofreading program that uses artificial intelligence to check your punctuation, usage, phraseology and more.

Sensible Grammar scans your work for potential errors and automatically displays the sentences in which they appear. It explains what's wrong and even suggests corrections. Making changes is easy—a simple click of the mouse, and you can do anything from inserting proper punctuation to rewriting entire sentences using the built-in sentence editor. And your formatting information remains unaffected.

Sensible Grammar compares your text against a library of over 4500 phrases to identify informal, vague, racist, sexist and other faulty language. It catches embarrassing typographical errors like misused capitalization and repeated words, and alerts you to mismatched verbs and pronouns, needlessly long sentences and more. It even provides a readability analysis.

Sensible Grammar works with WordPerfect, Microsoft Word, Works, and Write, Apple/Claris MacWrite and MacWrite II, T/Maker WriteNow and text files. And it costs just \$99.95.

So get Sensible Grammar. And be the most effective communicator you can be.

Also available: Bookends,™ the reference management database and bibliography preparation system (\$99.95).



Please circle 34 on reader service card.

#### LETTERS

functions, the Mac can be used to visualize data while the user is writing a report, answering E-mail, creating a presentation, and manipulating a spreadsheet. Therefore, a function such as saving is essential to a Mac user but may not be to a supercomputer user. If Spyglass keeps in touch with Mac users' needs, its products should receive even wider acceptance.

—RI

#### A La Carte Support?

Regarding Robert Wiggins' "Support Woes" column (February '91, page 29), why doesn't anyone point out that product support is never free? It doesn't take a rocket scientist to figure out that whether the vendor charges for it directly or not, the vendor still incurs exactly the same costs — such as overhead and salary to provide service for that caller. These support costs must come from customers who either pay for it up front when the product is purchased or at the time the call is made.

For example, the average toll-free phone call to WordPerfect costs the manufacturer \$20. Let's assume an average of two calls, or \$40, per package sold. The normal software discount to distributors is 60 percent, so the \$40 in actual costs to WordPerfect translates to \$100 added to the retail price. This means that even if you never use the toll-free support, you've paid as much as \$100 more than you needed to when you bought the software.

I believe that if you buy an intuitively programmed package with a good manual, you should strongly support a per-call charge for product support. Otherwise you're just subsidizing users who call without reading the manual.

I do get irritated about paying for support on a per-call or contract basis. But I'd probably get over that irritation quickly if the prices of all my favorite programs dropped by \$100 and the cost of support were unbundled.

Paul Zuzelo Half Moon Bay, CA

That's a nice idea in theory. It would be especially nice for individual users, if only it worked that way. But in practice it doesn't. Separate support fees do not resultinlower software costs. Software prices remain about the same, and support becomes an extra cost added to the already high product costs. Consider QuarkXPress and PageMaker, which already have a high price and also charge for support.

Business users also wouldn't fare well.

They would have problems getting purchase orders approved every time they needed support or subscription renewal. It's much easier for them to pay all costs in one chunk.—RW

#### Rein in Dvorak . . .

I'm writing to MacUser regarding one of your contributing editors, Mr. John C. Dvorak. I don't care what he thinks about the political side of Apple. I would much rather read his opinion on such matters as what really are the significant differences between Dvorak's PC and our Macs, why Apple's methodologies may or may not be inferior, and what is wrong with the pricing and technical-support policies of the Apple system.

His February column ("Apple Events," page 400) says so little and yet manages to fill a page. His style of critique is more than a little petulant, and it certainly displays poor upbringing. To say the least, it is impolite to deride someone's accent or facial mannerisms.

If you cannot corral his acerbic talents, then why not just drop him? I'm sure there are others, maybe less well known for their acidity, who could positively contribute to the debate between Apple devotees and IBM practitioners.

James A. Hauck Pleasanton, CA

#### ... Or Let Dvorak Reign

I've always wondered what it would take to incite me to write a letter to the editor. Now I know. John C. Dvorak's January column ("The Gloom and Doom Boom," page 346) did it. Often monthly essays are no more than a way to fill a page, and even the authors sometimes seem bored with the process.

Not so this time. Dvorak always makes us think, but this month's bonus was that he read my mind and eloquently told the whole world how I feel. Thank you and bravo!

Chuck Klein Orangevale, CA

#### Clarification

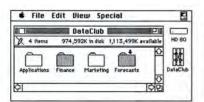
The review of Spyglass Dicer (February '91, page 60) overlooked the fact that the sample image that ships with it had its data prenormalized to a 1 - 255 range So, contrary to what the review implied. Spyglass Dicer does retain the original value, which it displays whenever you click on a data element.

#### "How is DataClub Different from TOPS?"

DataClub™ is a breakthrough in file server software. It overcomes the limitations of TOPS'\*conventional peer-to-peer architecture to give you a network that's more powerful, more reliable, easier to use, and easier to expand.

The key is DataClub's new Virtual Server™ technology, which uses available resources around the network to create one powerful, shared disk that is centrally managed and maintained. And this makes a big difference for you.

#### With DataClub:



The DataClub window opens just like any other disk – only it's shared and secure.

"TOPS used to be the simpler, cheaper network, but DataClub beats it on expense and setup simplicity."

Phillip Robinson
San Jose Mercury News

Folders are always available	DataClub gives users access to the entire shared file system 100% of the time.	On a TOPS network, mounted folders disappear when machines shut down or leave the network.
Files are easy to get to	All files and folders are found under the single DataClub icon.	With TOPS you have to spend valuable time mounting and searching multiple volumes.
Location transparency	DataClub's Virtual Server technology allows users to access data without having to know on which machine it's physically stored.	TOPS users must know where a file is physically stored in order to access it.
No need for publishing	Just store files under the DataClub icon, and they're available to the network.	TOPS requires all data to be published before it can be shared.
Unlimited scalability	Thanks to its Virtual Server tech- nology, an expanding DataClub network retains its simplicity and actually grows more powerful.	As peer-to-peer systems like TOPS grow, they become more and more unmanageable.
Add users without reconfiguring	DataClub automatically reconfigures the network whenever hardware is added or removed.	On a TOPS network, users have to mount volumes manually every time a new user or disk is added.
Centralized backup	You can back up a DataClub network quickly, easily, and more often – because all shared information can be backed up from any Mac, at any time, without interruption to the system.	By contrast, TOPS requires individual back up of each node.
Nine levels of security options	DataClub provides the highest Apple-approved security you can get – nine levels.	TOPS offers just one.
One password per user	With DataClub you only need one password per user.	With TOPS you need a different password for each folder, adding more confusion than security.
Centralized registered users	DataClub lets you create a single set of users and groups which is valid for all Macs and disks on the network.	TOPS has no support for registered users and groups.
Complete AFP compliance	DataClub complies fully with the AppleTalk Filing Protocol standard.	TOPS does not. So DataClub is compatible with more applications – especially multi-user databases.
Lower cost	Though it's much more capable, DataClub actually costs you less – one third the price of TOPS. And even less than that on larger networks.	Any way you look at it TOPS costs you more time and money.

#### TOPS Upgrade Offer

Upgrade to a DataClub 3-pack for only \$124.76 (only \$42 per user). Just call us toll-free with your TOPS serial number, or send/fax us the first page of your TOPS manual. Limit two per customer.

This is a limited-time offer\* – so don't wait! Whether you're new to networking or are looking to improve on what you have, place your DataClub order today with a toll-free call. And get network performance that can't be topped!

800-735-1776

Please circle 363 on reader service card.

### **DataClub**

DataClub is a product of International Business Software. 1270 Oakmead Parkway, Suite 314, Sunnyvale, CA 94086 Phone 408-522-8000 Fax 800-733-2811 or 408-720-0289. TOPS is a registered trademark of Sitka Corp. All products and brand names are the trademarks of their respective holders. \*This offer may be canceled at any time without prior notice.



DataClub's Virtual Server appears as a single, centralized file server and gets more powerful as it expands.

# Our Newest Introduction. Ehman

Color monitor illustration by Rob Mageira.

Since 1985 Ehman has been a leader in providing high quality peripherals to the Macintosh market. Our hard drives, monochrome monitors, and removable drives have been a mainstay

DiskDoubler

Normand the Capacity of All Microscope Challed

and high November Challed

November Challed Challed Challed

November Challed Challed Challed

November Challed Challed Challed Challed

November Challed Challed Challed Challed

November Challed Challed Challed Challed Challed Challed

November Challed Cha

to the industry, with a name that is well known and highly respected.

Now allow us to introduce the newest

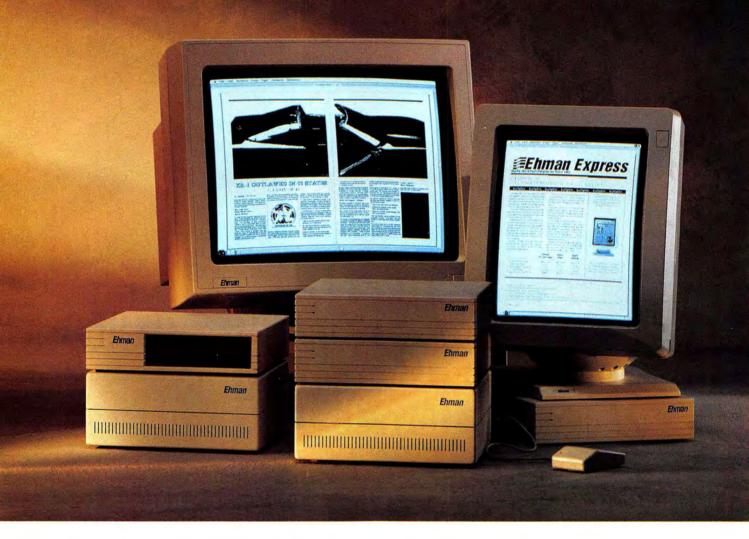
All hard drives come bundled with your choice of two utility software packages.

member of our family; 20 inches of 8 bit color in a high quality, 72 DPI monitor that end users will love, and budget watchers will adore.

The new Ehman 2-page color monitor. It's as affordable as it is practical. Backed up by a one year warranty and our 30 day money back guarantee the price tag once again demonstrates Ehman's commitment to value on the most popular peripherals.

The other members of the family are all just as cost conscious. From the new super 185MB drives to our popular 45MB removable drive, as well as the monochrome monitors, you'll find our prices

## No Introduction Needed.



Removable 45 MB Hard Drive \$529			Color 20" Monitor \$2,987			Monochrome 19" Monitor \$895				Monochrome 15" Monitor \$495								
External	\$279	\$299	\$339	\$309	\$405	\$329	\$389	\$469	\$619	\$769	\$889	\$749	\$829	\$979	\$1299	\$1679	\$1899	\$2499
Internal	\$229	\$249	\$299	\$259	\$349	\$289	\$339	\$409	\$559	\$719	\$839	\$699	\$779	\$929	\$1249	\$1629	\$1849	\$2449
(MB)	20 +	30+	40Q	45+	52Q LPS	60+	80+	105Q	105Q LPS	165SW	170Q	185F	204SW	210Q	332W H/H	330WR F/H	601W F/H	660WR F/H

among the lowest in the industry, and our commitment to quality and service the highest.

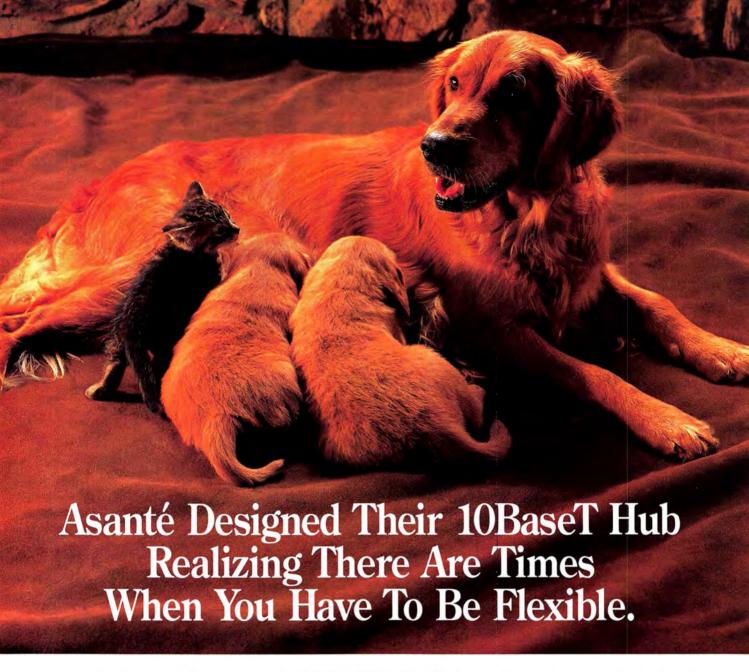
Ehman has always had what you want most; affordable quality. Now with the introduction of our 2-page color monitor we also have the full line of peripherals you need most.



Ehman Ships All Drives Free And Overnight.



Please circle 180 on reader service card.



No one likes to be left out. And with the 10BaseT network hub from Asanté,™ no one is.

The Asanté 10T Hub™ comes standard with all the right connections: twelve 10BaseT ports, plus one each for thick and thin Ethernet.™ The media flexibility you need in any office.

Installation is easy, since the 10T Hub requires no special software.



Every hub shibs with interchangeable back panels that allow you to connect using either RJ-45 jacks or a 50-pin connector.

And it ships with interchangeable back panels, so you can make

your 10BaseT connections two ways: with simple RJ-45 plugs, or a 50-pin



connected simultaneously for maximum flexibility.

All 14 ports on our hub may be

from Asanté. It will turn your office into one big happy family.

connector for a telephone system punch-down block.

The 10T Hub is just another example of networking leadership from Asanté, a company that brings you a full line of Ethernet cards for all Macintoshes. Like all Asanté products, our hub meets the IEEE Ethernet specifications and is compatible with all popular hardware and software. Reliability is guaranteed with our 5-year, hassle-free warranty.

Plug into the 10T Hub

> Asanté Technologies, Inc. 404 Tasman Dr., Sunnyvale, CA 94089 1.800.662.9686

©1991 Asanté Technologies, Inc. All brand names and products are trademarks or registered trademarks of their respective holders. Resellers: Asanté products are available from Ingram/MicroD, Macamerica, and Tech Data.

## **The Princess & the Printer**



The decisions you face when buying a printer are endless: price, output quality, PostScript compatibility, and font strategies....
Will it ever be possible to print happily ever after?

nce upon a time — it may even have been yesterday — there was a magical kingdom called Cupertinia, presided over by the wise monarch King Macintosh, the User-Friendly. You could tell he was wise because he'd bought Apple at 29 3/4 — twice.

The king had a lovely daughter, Princess Classica. Classica spent her days skipping through the meadows of her father's kingdom, talking to the butterflies, singing enchanting little songs, and conducting anecdotal market research amongst the peasantry. She also ran a small desktop-publishing business on the side.

"Princess Classica! Princess Classica! Long live the beautiful Princess Classica," the adoring peasants would shout as she skipped by.

"Princess Classica! Princess Classica! When are we going to have an affordable, high-quality printer for less than \$1,000?" the more pragmatic peasants would shout as she skipped by.

Princess Classica was no fool; she knew pent-up demand when she saw it. She also knew that although her popularity was riding high at the time, it wouldn't take much to lose the loyalty of her public.

The princess wanted nothing more than to keep the people of her kingdom happy. "Father," she asked the king, "our people seem happy right now. Yet to have a truly blessed kingdom, we must always stay one step ahead of their wish list. What should we do next?"

"You are wise, Princess," said the king, "Go see what the magicians in my Royal Skunk-Works have up their ample and mysterious sleeves." So off she went to the Royal Skunk-Works, in a remote corner of the kingdom.

"What can we build for you, your royal princessness?" said the Chief Engineer and Overall Cleverperson.

"I need a PostScript laser printer the masses can afford. That's the only way to fulfill the promise of Macintosh and keep the people happy."

"But, milady, they already have low-cost CPUs. The Macintosh Classic has become the single best-selling CPU model in all of computerdom."

"Yes, but what good is a CPU by itself? Most people still need hard-copy output. And they're not going to spend more money on the printer than they did on the CPU — or do you think money grows on trees?"

"Of course not, milady. Everybody knows money is printed on Rumplestiltskin's Tektronix Phaser PX color printer. Why, all the details on this and other printers are conveyed in the current issue of *MacUser*, milady."

"Hmmm...I'll have to read that as soon as I get a chance."

The Chief Engineer continued, "I can make for you a 360-dpi inkjet printer for \$599. It will be of the highest output quality, but it cannot be PostScript. The leaders of the land of Adobe will not share their PostScript magic with us—at least not at that price. But go forth, and tell the people the good news about the inkjet. In fact, it will be shipped just in time to be previewed in the current issue of *MacUser*."

The Chief Engineer went back to his workbench, and the princess went back to her market research.

"The printer is coming," she proclaimed. "What else do you want?"

"System 7.0! System 7.0! We want System 7.0!" the people shouted.

"Get real!" retorted the princess. "What do you think this is, a fairy tale?"

"Well," cried the people in unison, "how about if we could use the old VGA monitors we have hanging around from our old PC clones with our new Macintosh LCs?"

"Consider it done," said the princess. And even though the Royal SkunkWorks had not announced this fact with any fanfare, it was, in fact, true. "What else?"

"A single font standard!"

"Hmmmm . . . ."

Uh-oh, thought the princess. Fonts are intimately tied up with PostScript. This request, the princess knew, was beyond the ken of the Overall Cleverperson of the kingdom. So the princess headed off to visit an even cleverer person who lived in the neighboring kingdom, the ruler of the land of Adobe, the beneficent warlock Warnock.

#### Just a Fontasy

"Oh wise and wizardly warlock Warnock," cooed the alliterative princess, "my people pine for the pizzazz and practicality of PostScript printers."

"Verily, PostScript is, in sooth, a fine thing."

"But, your wiseness, PostScript is, in sooth, a fine and *expensive* thing. Oh, and they want you to clear up this confusing font business."

"'Tis true, your princessness. I require a substantial tithe, in sooth, to help capitalize my R&D costs for this fine PostScript."

"You are indeed a wise warlock, Warnock,

and a talented one - you are able to pronounce tithe and sooth in the same sentence. Someone that clever must indeed have some very fine improvements in store for PostScript; with all those tithes. you can afford the finest magicians on your R&D staff. Prithee, what glad tidings are we getting for our less-than-glad tithings?

"Ah! Prepare to be amazed and astounded! Behold! A new font standard!!!"

"A font standard is, indeed, a wondrous

thing. But is that what is needed to keep my people happy? You already have a fine and wondrous Type 1 standard. And with the mystical powers of the Adobe Type Manager — the ATM — you have rid our kingdom of the evil and vile jaggies."

"Did you ever notice that evil and vile are anagrams? Or that ATM is an appropriately chosen acronym for this utility that has dispensed much gold into our coffers?"

"Well," said the princess, "money doesn't grow on trees. But methinks you're changing the subject. Let's get back to fonts. My people were all happy with Type 1 fonts, once you opened the spec up to the other type wizards. And ATM elicited many a rousing cheer from amongst the people - including an Editors' Choice award from the scribes at MacUser. And, indeed, my own kingdom of Cupertinia is releasing its own new font standard - for the truest of all true type (described elsewhere in MacUser's current issue). What for do we need another font standard? And what about the cheap printers we all want? The people grow restless and talk of visiting the distant land of the Windows people."

"Ah, princess, sit down, and I will explain all. Our new font technology is called Multiple Masters."

#### A Servant to Multiple Masters

"Consider how ATM does not limit you to just the particular type sizes your font supplier provides," quoth the warlock. "You can set the type size to any number of points, and ATM does the rest. Well, font vendors make some other rather arbitrary design choices - how heavy a font is, how italic its italics are, how serify or san serify it is, and so on. A Multiple Master font gives you control over a continuum of choices on all of these 'axes,' just as you now have continuous control over type size."

"This sounds powerful," said the princess, "but also complicated. My people want simplicity, not complexity. Suppose I'm using a font in a page-layout program and something's not working. There are too many things that could be responsible. How are my people supposed to keep

track of these things?"

"Buy a clue, lady! We're just characters in a magazine column, after all. If life were that simple, nobody would need to buy magazines, and then where would we be?'

"I never thought of it that way," replied Princess Classica, wondering what René

## What Your Computer **Was Really**

#### EXPANDING HORIZONS

There's a vast world of information and services out there. A world that's current, vital, and constantly updated. DELPHI, your complete online personal resource, brings that world a little closer. With your modem, you can join special interest groups, download software, meet new friends or tap into the world's most comprehensive databases to expand the horizons of your computer.

Meant

#### You can reach DELPHI

with a local phone call from almost anywhere. There is NO premium for access at 1200 or 2400 bps, and standard connect rates are only \$6/hour. The basic fee of \$5.95 per month includes your first

hour of usage. For even lower rates, join DELPHI's new 20/20 Advantage Plan and enjoy 20 hours of usage per month for only \$20!

#### EXTENSIVE SERVICES

With a simple phone call from your home or office, you get the latest news from the major wire services, discounts on travel reservations, complete business and financial services, stock quotes, online shopping, sophisticated electronic mail, telex, fax, conferencing, interactive games, special interest groups and even a complete encyclopedia.

#### PARTICIPATE

Chat with other members and computer experts in Conference, and post or respond to messages in Forum. Win great prizes when you jump into a worldwide trivia tournament and play computer games!



#### FREE MEMBERSHIP

For a limited time you can join DELPHI for free!

#### NO RISK

With DELPHI there is no risk. If for any reason you aren't satisfied, cancel your membership and we'll refund your first monthly fee.

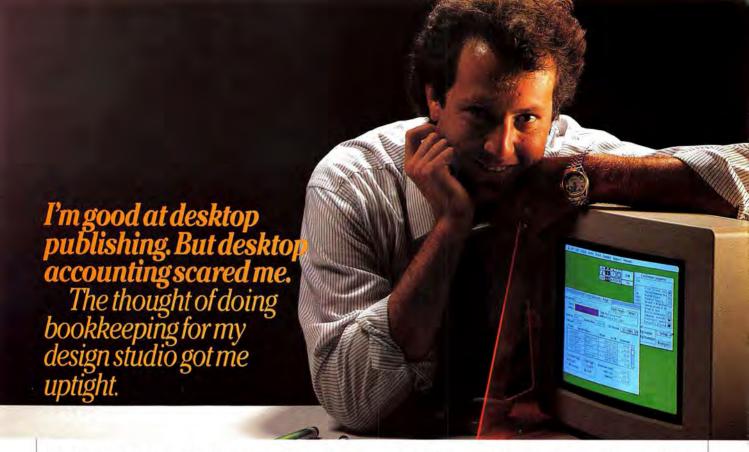
#### Join now online for FREE:

Dial 1-800-365-4636 (by modem) At *Username*: enter JOINDELPHI At *Password*: enter MAC5

Questions? Call 1-800-544-4005 (voice)



Please circle 125 on reader service card.



When I heard "balance sheet," I broke into a sweat. I know type, advertising, printing. Now I was forced to do our books.

No choice.

We were on our third part-time bookkeeper in eleven months, and she was called away suddenly. Sound familiar?

But I'm the boss and the buck stops with me. We had bills to pay, payroll checks to write, invoices to send, taxes to

set aside.



And deadbeats to collect fromonly I had no idea who owed us how much or for how long. Some suppliers may have even

thought of us as deadbeats. Ineeded to know our cash flow, and get a handle on all this. But I didn't have a lot of time.

Step one: find an accounting program that feels as familiar as our Macs, that starts out easy, but has lots of reserve firepower for later on.

Ifound at Once! The manual looked orderly. I dug in...

#### The familiar with the unfamiliar

atOnce! starts you off with a tutorial that uses HyperCard, one of my old favorites. I was at home.

Numbers are my nemesis, but the tutorial was actually fun and got me comfortable. It takes you step by step through the program, and gives you some easy-toswallow accounting basics so you're not reading a foreign language. There's context-sensitive help, just in case.

And while you learn, you can start to set up your books. So it doesn't come in a flash and you sweat a little. But you do it and you learn.

Istarted off light. Double-clicked on one of the default charts of accounts and my General Ledger was practically set up for me. Then entered a few client names in Accounts Receivable, to get an idea of what was coming in. Prepared six invoices-and atOnce! calculated sales tax. Nice. Printed the invoices which I redesigned in atOnce!-realign a field here, change a font there. The usual.

Then ran a Customer Aging Report to identify the slow-payers (I had no idea such a terrific thing was even possible).

MacWorld: 1990 World Class Award MacUser: 1989 Editor's Choice Award and 4.5 mice

#### 30 days free support

30-Day Money Back Guarantee if you bough it from Peachtree. You can get your money back, minus a \$25 re-stocking fee.

#### What I didn't know was costing my company

I discovered a key client who hadn't paid in two months. I called

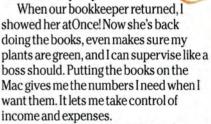
and collected and now he wants to know about atOnce! I wrote payroll checks for the staff, and sent our bank a balance

sheet I printed out myself-no sweat.

From fear and loathing to passion. Now I even study the management reports atOnce! generates.

I'm still an art director. But atOnce! helped me become a better businessman!

#### A hidden bonus that made my day



Here's some free advice: Take control of your own business. Buy at Once!



### Peachtree Software

1505 Pavilion Place Norcross GA 30093 800 247-3224 OR 404 564-5800

SYSTEM REQUIREMENTS: MACINTOSH PLUS OR ABOVE WITH AT LEAST I MB RAM, SYSTEM YERSION 4.2 OR HIGHER, HARD DISK AND ONE 800K PLOPPY DRIVE, IMAGEWRITER®AND LASERWRITER®PRINTER COMPATIBLE, APPLESHARE: "AND TOPS®COMPATIBLE, COPYRIGHT I 1980 PEACHTREES FOR TWARE, INC. ALL RIGHTS RESERVED, ATONCE IS A REGISTERED TRADEMARK OF PEACHTREES OFTWARE. INC. MACINTOSH, HYPECRAD, IMAGEWRITER AND LASERWRITER ARE REGISTERED TRADEMARKS AND APPLESHARE IS A TRADEMARK OF APPLE COMPUTER, INC. TOPS IS A REGISTERED TRADEMARK OF SUN MICROSYSTEMS, INC.

Please circle 138 on reader service card.

Descartes would have to say about her situation. "But back to fonts. You've got your Type 1 fonts, you've got your Multiple Masters —"

"Multiple Masters is actually a type of Type 1 font," interjected the warlock.

"— which is a type of Type 1 font, and you've got your TrueType fonts —"

"Well, they're not *our* TrueType fonts. Those fonts came from *your* kingdom, princess...."

"Your kingdom, my kingdom - what's

the difference? My people are still confused. And when things get complicated, the peasants get revolting."

#### Prints and the Revolution

"Don't talk to me about revolting, princess: We're the folks who made all those 17-fonts-on-a-single-page documents possible, But not to worry."

But the princess was worried. "The world thinks the world of PostScript. In fact, there are lots of people who equate PostScript with all that is good about printing: high resolution, no jaggies, lots of fonts to choose from, rich graphics —"

"Yes, yes, PostScript gives you all of that and more."

"But you don't need PostScript for all that. You never did. There are many fine non-PostScript laser printers, non-PostScript fonts, and non-PostScript graphics programs. It's just that most printer manufacturers figured that anybody willing and able to pay the big bucks for a laser printer would want PostScript to boot."

"And boot it they did! Every time they boot up a PostScript printer, I can just hear those coffers clinking."

"But warlock! Our own magicians have just presented the people with a 360-dpi inkjet printer. That's an even higher resolution than that of most PostScript laser printers — and it lists for less than 600 bucks! And our new non-PostScript laser printer costs less than \$1,300."

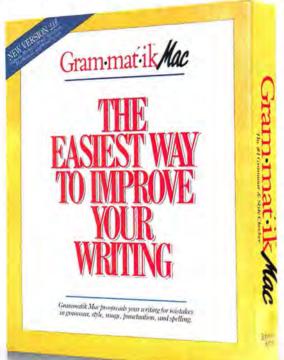
"Yes, yes, and the wizards from the distant kingdom of GCC have an even less expensive laser printer, listing at less than a thousand pieces of gold, with even better benchmark-test results than those of your own low-cost laser. I've already read MacUser Labs' current report. And not a farthing of those low prices goes for our pretty PostScript," moaned the warlock.

"Hmmm, ... I'd better get around to reading that issue," thought the princess.

#### The Princess and the P-Word

The princess was still confused about PostScript. Those new printers sound hot, thought the princess — even without PostScript. And a new font type can't hurt anyone — more options can only be a better thing, right? But Princess Classica left the land of Adobe in a state of greater confusion than she was in when she arrived. "I think I have a question," she mused aloud, "but I'm not even sure what it is anymore. This should be a happy day throughout the land. But methinks that all

Great Grammar,



## Guaranteed.

Grammatik™ Mac is the #1 grammar and style checker for the Macintosh.® It's so effective, we guarantee it will make your grammar great, your memos more memorable, and your proposals more professional, or your money back.\*

Grammatik Mac proofreads your writing for thousands of errors in grammar, style, usage, punctuation, and spelling. It gives you instant feedback, on-line grammar and style help, and even lets you add your

own writing rules. All of which makes you a better writer, faster. Guaranteed. See your software dealer or call: (800) 872-9933

Gram·mat·ik/lac

The #1 Grammar & Style Checker

Reference Reference Software International, 330 Townsend Street, Suite 123, San Francisco, CA 94107. (415) 541-0222. 
Software - \*See your dealer for details. Grammatik is a trademark of Wang Laboratories. 
♥ 1991

Please circle 38 on reader service card.

## You Take Care Of Business.



Introducing the accounting software that does just what you need it to do.

Everything.

ACCPAC® accounting software was designed specifically



for businesses like yours—so you can spend less time balancing your books and more time

building your business.

No matter what you need to do—send an invoice, pay a bill, write a paycheck—ACCPAC provides a quick and simple way to do it. And it's so easy to learn you'll have it up and running in minutes.

At the same time, the

ACCPAC family offers more advanced and comprehensive accounting packages that your company can easily upgrade to



CA's Computing Architecture For The 90s protects and enhances the value of every CA software solution.

as your business grows.

That's why today, ACCPAC is the best-selling accounting software in the U.S. and Canada. All kinds of businesses in every type of industry trust their books to ACCPAC.

So should you.

Ask for ACCPAC BEDFORD® at your local software dealer or call 1-800-531-5236.

And then take care of business. ACCPAC will take

care of your books.



## We'll Take Care Of Your Books.

these new font choices will serve only to frustrate. Even more so, as 1 hear that a clone of PostScript called Bauer is coming posthaste from behind the castle walls of the supreme and utter wizards in Redmond, the masters of Microsoft."

"Aaaah, you don't want to enter *those* Gates," cried a gruff voice behind her. "I'll bet you two-to-one that *I'm* the wizard you need to see."

"Two-to-one? Well, those certainly are good odds, but —" "Exactly! I'm the Wizard of Odds. Five'll get you ten that you've seen my movie?"

"Is that the one where everything is black-and-white until the Mac II arrives?"

"That's the one. I'm your chief oddsmaker. See, nine times out of ten, the people don't need anything new to keep them happy. They think they need more than they have, but they really just need to solve their problems. And the key to problem solving is troubleshooting."

"Troubleshooting?"

"It's like dragon slaying; the secret is to eliminate the easiest opponents first. Nine times out of ten, that'll solve whatever problem you have."

"OK, Wiz, so what do we do?"

"The trick is to isolate the problem. If you can't get your printer to print, for example, try to print a very simple document — just text, no fancy fontwork, no graphics. If you can at least print a simple document, you've ruled out the causes of 90 percent of all difficulties: loose cables, printer out of paper, power off, and so on."

"That sounds fine," said the princess.
"But what if the problems persist?"

"Most people think that problems crop up all on their own, but they almost never do. Usually they arise because you're doing something differently. Whenever you think you're doing exactly the same thing you were doing before, think again; chances are something is different. Because the Macintosh does such a fine job of keeping most of the annoying details of its operation hidden from view, it also makes it tough to see what the problem is when things go wrong."

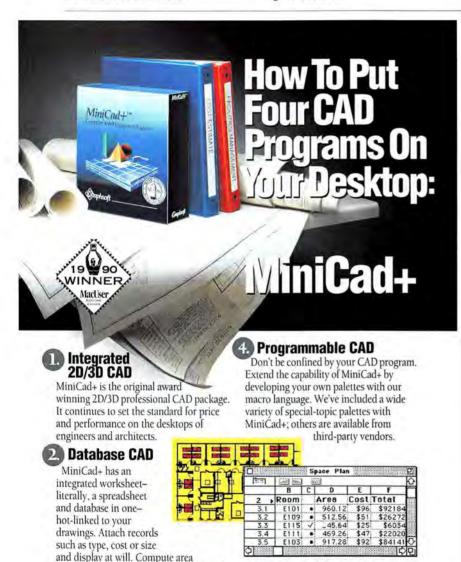
"Your difficulties probably have nothing to do with PostScript," continued the wizard, "or font conflicts, or the other perils that concern you. And once you've isolated the trouble, the solutions are usually obvious and easy. So go forth, and tell your people to embrace the new technologies and be happy."

#### The Morale of the Story

The princess thanked the wizard and returned to her kingdom. "What have you brought to keep us happy?" the people demanded.

And as the princess started to address her subjects, a smile began to spread across her face. "I have brought you the greatest gift of all: Nothing! No more choices to make for a whole month!"

And the people cheered and were happy — for a month.



Draw On Our Experience

Packed with features, the only thing small about MiniCad+ is the price. As a

professional, you owe it to your desktop

1990 MacUser Editor's Choice winner in

to ask your favorite distributor for the

CAD, or call us for more information.

calculations, compile parts schedules and

Our "Smart Cursor" automatically

snaps, intersections, tangents and

highlights, identifies and aligns relevant

parallels. Snap to the precise point with

more ease than you've experienced with

any other program. We built the brains into MiniCad+ so you can think about

develop cost estimates.

M Intelligent CAD

more important things

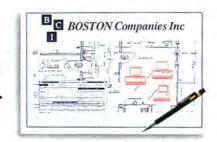
## Why Do Programmers At

**Companies That Trade** 





Design





& Satisfy



Use Our #1 Languages?









Is it coincidence that the leading companies in America use THINK C™ and THINK Pascal,™ the leading languages for the Macintosh®? Call for our FREE DEMO DISK to find out. 800/228-4122 Ext. 348 F.







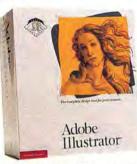




NEC CD-Rom and Type Gallery
Now you can buy the Adobe Type Library from NEC for an
unbelievably low price. You'll get NEC's Type Gallery PS Locked
Version and the amazing NEC Intersect CDR-36 CD-ROM reader. You can choose any three typeface families (up to a maximum of 15 individual typefaces) from nearly

all 200 of the Adobe volumes. Plus, you'll save an average of 46% every time you call NEC in the future to unlock additional families.

CD-ROM and Type Gallery ..... \$449



#### Adobe Illustrator 3.0

Adobe Illustrator 3.0 is the premier product for single page design on the Macintosh. Adobe Illustrator 3.0 offers the highest quality design and illustration capabilities and now includes a powerful new text handling tool allowing for direct, on-screen entering

and manipulation of text. Users can create and edit charts and graphs with ease while using new interactive dialog boxes for faster access to features. If this is not enough, every copy of Abode Illustrator 3.0 comes with Adobe Type Manager. Voted Product of the Year in InfoWorld

Adobe Illustrator 3.0 .....\$348

#### Drafting & CAD

Abracadata
Design Your Own Home
Architect 64.
Home Interiors64.
Home Landscape 64.
Claris
Claris CAD 2.0648.
MacDraw II 1.1288.
Generic Software
Generic Cadd Level 1 83.

	,
Generic Software	
Generic Cadd Maci	ntosh 374.
Graphsoft	
Blueprint 2.0	218.
MiniCad Plus 3.0	594.
Innovative Data D	esign
Dreams	348.
MacDraft 2.1	278.
Versa Cad	
Drafter	525.



#### FONTS & CLIP ART

3G Graphics	Drea
Images w/Impact	Mac
Accents and Borders 64.	Mac
Business64.	Clipt
Graphics & Symbols49.	Clipt
Adobe Systems Inc.	Clipt
The Mac Zone carriers the entire	T/Ma
Adobe font library call for prices.	Click
Adobe Plus Pack 108.	Busi
Adobe Type Reunion 37.	Busi
Adobe Type Set 1 or 2 ea 57.	Chris
Adobe Type Set 3 115.	Pers
Smart Art 1 thru 4 58.	EPS
Type on Call65.	
Ares Software Corp.	EPS
Font Monger 62.	

Ī	Dream Maker
	MacGallery (HyperCard ) 26.
	MacGallery (MacPaint) 26.
	Cliptures: Business Vol 1 68.
	Cliptures: Business Vol 2 68.
	Cliptures: Sports Vol 3 68.
	T/Maker
3.	Click Art
	Business Cartoons31.
	Business Images31.
	Christian Images38.
	Personal Graphics31.
	EPS Animals And Nature 82.
	EPS Business Art 82.
	EPS Illustrations 82.

Intersect CDR-36 Type Gallery

#### GRAPHICS AND

Our commitment:

Adobe Systems Inc	
Type Align	58.
Illustrator 3.0 w/ ATM	348.
Type Manager 2.0	
Photo Shop	
Streamline 2.0	
Aldus	
Freehand 3.0	405.
PageMaker 4.0	
Digital Darkroom 2.0	
Personal Press 1.0	
Super 3D 2.1	
SuperPaint 2.0	134.
Altsys	
Art Importer 2.0	88.
Fontographer 3.2	
Brøderbund	
Kid Pix	31.
BannerMania	
Print Shop	
TypeStyler 1.5	
CE Software	
Amazing Paint	64.
Calendar Maker 3.0	

١	PHICS AND	1
	Claris	
	MacPaint II 2.0	91.
	SmartForm Designer	288.
	Deneba	
	Canvas 2.1	188.
	UltraPaint	
	Dynaware USA, Inc	
	DynaPerspective 2.0	599.
	Electronic Arts	
	Studio 8 2.0	188
	Studio 32	
	Frame Technology Con	
	Frame Maker	
	Koala Technologies Co	
	Mac Vision	
	Letraset Graphic Desig	
	ColorStudio	
	ImageStudio	
	ReadySetGo! 4.5	
	24 3 2 3 2 3 Company of the Company	101.
	Mainstay	44
	Capture 3.0	44.

PS Bundle	
Type Gallery PS, Photo	Gallery
or Image Gallery	ea.245.
Olduvai	
Video Paint	278.
Paracomp	
Draw Tools	58.
Model Shop	
Swivel 3D 1.1	
Swivel 3D Professional	
Swivel Art 3D	81.
Pixar	
MacRenderman	
Showplace	468.
Preferred Publishers	
Exposure Pro	
Master Color	
MasterPaint 1.0	49.
Quark Inc.	
Quark Xpress 3.0	518.
QuarkStyle	188.
Salient	
Partner 1.01	55.
Softview	
if:X Forms Designer 1.0	168.
Solutions	
Curator	86.
SuperMac Technolog	V
PixelPaint 2.1	148.
PixelPaint Pro 2.0	464.
Timeworks	
Publish It Easy 2.0	144.
Ventura Software	
THE RESERVED TO THE POST OF THE PARTY OF THE	

Ventura Publisher for Mac . 584

DeskPaint/ Draw 3.0.3 ...... 114.

**Gold Disk** Animation Works

Animation Works is a 1 to 8 bit, easy-to-use, path-based animation program. Objects are created in the CEL editor and then animated over static or scrolling backgrounds in the Movie Editor. Also available is

the ability to add sounds, color cycling, multiple palettes, and looping control.



AnimationWorks .....\$122

## Media.Lab **PictureLink**

#### Media Lab **PictureLink**

PictureLink imports real-world full-color images (photos, artwork, 3D objects, anything!) into your database using a variety of methods. Scan into PictureLink directly from black and white or color scanners. Even grab real-world images in real-time from video sources such as cable TV, video camera, or other instruments. Use PictureLink to catalog images and data together for database applications where identification, documentation, and cataloging are essential. PictureLink "plugs into" 4th

DIMENSION, resulting in seamless integration of real-world pictures within the database environment and greatly reduces the time required for importing and editing images into database records.

PictureLink 1.0 ...... \$215



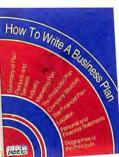
#### **3G Graphics** Accents & **Borders 1**

Zedcor, Inc.

The numerous borders, ornaments, labels, and symbols in Accents and Borders are crisp black & white and finely crafted. Unlike most clip-art offerings, all 3G images are opaque and most are strategically subgrouped for easy separation. Bonus color disk for registered users

Accents & Borders 1 ...... \$64

### Airborne Express shipping only \$3 per order



### AISB

### **How to Write a Business Plan**

The one software package that provides you with a complete, written, business plan. Includes entire narrative plus all financials and spreadsheets. Makes the preparation and writing of your plan as easy as ABC. This package prepares your projected three year profit and loss, balance sheet and cash flow statements. How to Write a Business Plan also provides you with all of your business plan's written sections including marketing, products

How to Write a Business Plan ...... \$85

Reality Technologies WealthBuilder

Calculate your net worth by using templates to create a personal profile balance sheet and budget summary. If you use Quicken, Andrew Tobias, Manage Your Money or Mac Money you can import data directly. Establish realistic financial goals, objectives and then take action!

WealthBuilder .....\$144



### **Now Shipping**





### Creative Software **Easy Color** Paint 2.0

Easy Color Paint 2.0 will bring many colorful and funfilled hours to your Macintosh LC or any Macintosh II. It's suitable for all levels of users: window locking for beginners, fancy menu options and a

pressure-sensitive pen for pros. Print your masterpiece in color to the ImageWriter II or any Color QuickDraw printer. No wonder it's a Finalist for "Best Personal Creativity Program" in this year's Software Publishers awards. See for yourself what all the excitement is about.

Easy Color Paint 2.0 ......\$44



### Global Village **TelePort**

TelePort plugs into your ADB connector, like your mouse and keyboard, eliminating a power adaptor, freeing you serial ports, and enhancing portability. TelePort 2400 baud Hayes compatible modem incorporated MNP5 data compression/error correction.

Teleport.....\$128 w/ Send Fax....\$184



**GEOvista**<sup>TM</sup>

GEOvista, a Geographic Presentation System for the Macintosh, displays data on presentation quality maps. Information can be imported from other applications or entered directly from the keyboard. Areas of the map are shaded to represent data ranges selected by the user. Included with GEOvista are 52 template maps, one for each of the 50 states, subdivided by county, and 2 maps of the U.S. subdivided by

GEOvista.....<sup>\$</sup>169



### Personal Training Systems Personal Training

Systems Courses are just like having your own private tutor. The courses are interactive, which means you work on your Macintosh using the real program as the instructors talk you through step-by-step. These audio-based courses are self paced

and modular, allowing the learner to receive training at the most suitable level - beginning, intermediate, or advanced. Each course module is reusable, takes about 90 minutes to complete, and includes an audio cassette, example files on disk, and a quick reference card. The MacZone carries the complete line of Personal Training Systems programs. All Personal Training Systems Courses are unconditionally guaranteed.

Personal Training Systems ..... ea \$51

### WORD PROCESSING A Lacting Improcesson

A Lasting impression
Resume Expert47
Cover Letters 47
Ashton Tate
Full Write Pro 1.5 145
Baseline Publishing
Thunder 7 56
Caere Corporation
Omnipage 2.1 494
The Typist 478
Claris
MacWrite II 1.1 141

Delta Point
Taste 83.
Lifetree Software Inc.
Correct Grammar 2.0 55.
Microsoft Corporation
Word 4.0244.
Paragon Concepts
Nisus 3.01244.
Personal Bibliographic
ProCite 195.
Petroglyph Inc.

ı	u
	Preferred Publishers Vantage 1.550.
	Reference Software
	Grammatik Mac 2.0 49.
	SNA
	Stylist45.
	T/Maker
	WriteNow 2.2116.
	WordPerfect Corporation
	WordPerfect 2.0 228.

### ACCOUNTING & FINANCE

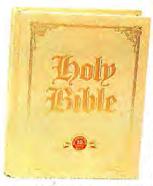
Editorial Advisor ....

Aatrix
Ultimate Payroll 4.0 188.
Checkwriter II 3.0 31.
Payroll 3.5 108.
Absolute Solutions
Computerized Classic Acctg224.
ACIUS
4th Dimension 2.1 488.
FileForce 1.0.1248.
AEC Management Systems
FastTrack Schedule 1.5 138.
After Hours Software
Touch Base85.
Checkmark Software
MultiLedger 1.3234.
Payroll 4.5( MultiLedger) 174.
Cash Ledger 114.

Computer Assoc Be	dford
ACCPAC Bedford 1.2	145
In House Software	135
Intuit	
Quicken 1.5	35
Meca Ventures	
Managing Your Money	134
Nolo Press	
For The Record 2.0	
Will Maker 4.0	36
Reality Technologies	
WealthBuilder	144
Softsync/Bloc	
Accountant Inc. Pro	344

Softview
MacinTax 1040 1990 Tax 58.
MacinTax State Sup 48.
if:X Personal Tax Analyst 47.
if:X Expense Reports ea.49.
Taxview 1040 Pro 335.
Survivor Software
Invoice It48.
MacMoney 3.558.
TELEWARE Incorporated
M.Y.O.B. 2.0144.
The Software Toolworks
Dollars And Cents 5.0 62.
TimeSlips
TimeSlips III 2.0 194.
The state of the s

### just honest business



### Bible Research Systems THE WORD Processor 5.0

Find any verse in the Bible instantly! Search for any word, or phrase or even for concepts using a built-in Thesaurus. Easily find the exact verse you need. Create your own Bible cross-reference lists that permanently store your personal studies. Print any

portion of Bible text. Select one of the four Bible Translations (NIV, KJV, NKJ, RSV). 10th Anniversary Edition!

THE WORD Processor 5.0 ..... \$145



FontMonger software converts type formats between PostScript Type 1 (for use in Adobe Type Manager), Type 3 and TrueType (for System7.0). It also provides complete Adobe Illustrator and Aldus Freehand support for TrueType, since all your converted fonts can be imported or exported as EPS files. You can even generate customized typefaces and characters such as obliques, fractions and small caps or merge characters from different typefaces together to form a new typeface.

FontMonger ...... \$62





### **NETWORKING & CONNECTIVITY**

Asantè
MacCon SE E or ET275.
MacCon SE/30 E or ET 340.
MacCon + II E or ET340.
MacCon + 30i E or ET 340.
Caravelle Networks Corp
Mac To Mac 5 Pack 164.
Cayman Systems
Gator Box 1,955.
Gator Share Software 1,350.
Gator Card E/II (II Series) 458.
Gator Mail Q (10 Users) 675.
CE Software
QuickMail 2.2.3 (1-5 User) 207.
DataViz
MacLink Plus PC 4.5 116.
MacLink Translators 97.
Dayna Communications Inc
EtherPrint -T 348.
EtherPrint Plus625.
DOS Mounter 2.0 53.
DayStar Digital
LT 2 MC LocalTalk Board 295.
LT 2 PC LocalTalk Board 185.

Fairfield
Clear Access 1.3 406.
Farallon
Ethernet
Mac II Card398.
SE/30 Card398.
Portable Pak328.
Star Controller EN500 1,588
PhoneNET Liaison 3.0 258.
PhoneNET Star Cont. EN 120.
PhoneNET
DIN-832.
DIN-8 (10 Pack) 197.
DB-934.
Liaison 3.0258.
Star Connector 17.
Star Controller 300 824.
Star Connector (10 Pack) 125.
PhoneNet To AppleTalk 8.
Remote Wakeup
Modem Cable31.
Timbuktu 3.1 (30 User ) . 1,284.
Timbuktu 3.194.
Timbuktu Remote 122.
Access Pack 844.
The same of the sa

	msiyma solutions
.406.	Access PC61.
. 400.	Soft PC 1.3241.
	Soft PC EGA/AT 124.
000	Soft PC Classic 125.
.398.	International Business
.398.	
. 328.	Software
1,588	DataClub 3 Pack
. 258.	DataClub 10 Pack538.
. 120.	Microcom
	Carbon Copy Mac116.
32.	Carbon Copy Twin Pack 168.
. 197.	Nuvotech
34.	Nuvolink II271.
. 258.	Nuvolink SC309.
17.	Turbo Bridge388.
. 824.	Turbo Net
. 125.	DB-9 19.
8.	DIN-819.
	DIN-8 (12pk)198.
31.	St - DB-9
,284.	St - DIN-8
94.	St 12 Pack DIN-8278.
. 122.	Turbo Star815.
. 844.	
	Shiva
	Netbridge405.
	Netserial274.
	Sitka/TOPS
	Tops 3.0 Network Mac 186.
105.	Flashbox Mac DIN-8 118.
69.	Tops Netprint 2.0 114.
32.	Systems Compatibility
51.	Software Bridge Mac78.
24	Durtward Dridge Wat

Insignia Solutions



### Animas True-Color Hand Scanner

Animas is proud to present itsTrue-Color Hand Scanner as the definitive answer to your desktop publishing. The AS-C105 is invincible; fully equipped with ColorScan MacCheese software which provides you with great flexibility and compatibility to paint, edit and save in the universal PICT format.

True-Color Hand Scanner .. \$575



### CompuServe Membership Kit CompuServe is the largest on-line

CompuServe is the largest on-line service, with over 500,000 users. Services include electronic mail, bulletin boards, special interest groups (Forums), and a discount department store. You can chat with other users in the CB mode, or check out the latest rumors in the gossip column. Databases include the complete text from

major newspapers and encyclopedias, plus stock data weather forecasts and book and movie reviews.

CompuServe Membership Kit ......\$22

### Accessories

AU	
American Power Convers	
UPS 370ci	418.
CoStar	
Label Writer	
Organizer	
Organizer Jr	78.
Ergotron	
Mac Tilt Classic	67.
Mac Tilt Platinum Plus	
Mac Tilt SE	67.
Farallon	
Voice Digitizer	88.
Sound System 2.02	158.
Go Technology	
Hot Keys	39.
I/O Design	
Black or Blue	
Imagewriter II Bag	
Mac Luggage Classic/SE	
Mac Luggage II/IIfx	
Mac Luggage Ilcx/ci/s	
Mac Luggage SE Ext	
Ultimate Classic Std	
Ultimate SE	78.
Ultimate SE Neon Colors	88.
Kensington	

Antiglare Filter 13" Apple .... Mac II Mon. Cable Ext. Kit ... Mac II Stand (No Cables) ....

Mac II Monitor Stand .... Mac IIcx Monitor Stand .

Kensington
Masterpiece Mac II 105.
Pass Proof 69.
Polarizing Filter32.
SE Anti Glare/Rad. Filter 51.
Super Base31.
System Saver Mac62.
System Saver SE52.
Tilt Swivel For SE or SE/30 21.
X-Long ADB Keyb. Cable 24.
Apple Security Kit System 32.
Power Backer 360 269.
Power Tree 10 19.
Power Tree 20 27.
Power Tree 50 54.
PLI
PLI Case Infinity Turbo 40 60.
Smack A Mac
Covers
13" Mon. & Ext Keyboard 18.
SE/Plus Ext. Keyboard 17.
SE/Plus Std. Keyboard 17.
Smack A Mac Stuffed Mac 8.
Toner Cartridge
II NTX104.
LaserWriter Plus89.
Targus Bags
Cx/Ci Black
Mac/SE Reg. Black
Mac/SE Xtb Blk,Gry,Wine 68.
Imagewriter Bag Blk or Blu 45.

### Basic Needs Inc. Nylon Dust Covers

Basic Needs Nylon Dust Covers protect your computer and printer against dust and spills. They look great because they are machinestitched and custom-fitted to your equipment. The platinum colored covers are made of washable, ripston nylon which is anti-static and



stop nylon which is anti-static and won't crack, yellow or fade like similiar priced vinyl

Nylon Dust Covers	.from \$12
Hard Top Keyboard Covers	\$15
Utility Pack	\$15

### No gimmicks or hidden charges

### Accelerators & Upgrade Boards

Applied Engineering	
Classic 1Mb Upgrade	118.
Portable Upgrade	
w/1Mb SRAM	385.
Quadralink	204.
Connectix Corporation	
Virtual - SE/30 IIx, IIcx, IIci	114.
Virtual Mac II w/PMMU	184.
DayStar Digital	
PowerCache 030 IIci	
40mhz w/o FPU	948.

40mhz w/FPU ......1,165.

50mhz w/o FPU ...... 1,688

50mhz w/FPU ...... 1,950.

DayStar Digital	
Fast Cache Ilci	278.
Powercard 030 w/o Co	Processor
25mhz II, IIx, IIcx	1,095.
33mhz II, IIx, IIcx	1,240.
40mhz II, IIx, IIcx	1,389.
50mhz II, IIx, IIcx	1,895.
Dave Computer Core	n

40mhz II, IIx, Ilcx 1,389.
50mhz II, IIx, IIcx 1,895.
Dove Computer Corp
MacSnap Upgrades
524XE (512KE to 1Mb) 195.
524XS (524XE w/SCSI) 260.
Marathon 030 Upgrades -
Bundled with Virtual 528.

Urange Micro
Mac 286 V3.0 1,078.
Mac 86 Card SE385.
Orange Micro 386 1,695.
Total Systems
Mercury
030 16mhz (Plus) 495.
030 16mhz (SE)375.
32-bit SCSI Module (Plus) . 185.
RAM Module245.
Gemini
030 20Mhz795.
030 25Mhz 995.
Gemini II
030 33mhz 1,195.
030 40mhz1,325.
030 50mhz 1,595.
Gemkit (Intl. or U.S.) 125.
MercuryKit95.

Oronno Mines

Call for our low prices on boards with a math co-processor.

**American Power** Conversion **UPS 110SE and** 

UPS 370ci
The power to protect your Mac.
APC's UPS110SE and UPS370ci not only to provide better line filtering and surge supression than most surge suppressors, but they also deliver backup power during ACX line failures - giving you enough time to perform a safe shutdown. The UPS 110SE is sized for (and slides right under) a SE, SE/30 or

Classics. The UPS370ci fits under your Mac II monitor and is sized to power a Mac ci or fx with a two-page monochrome monitor. APC also offers a complete line of more powerful UPS systems and PowerChute, a UPS monitoring program for AppleShare networks.

UPS	370ci	\$418
UPS	110SE	\$208



OrangeMicro Orange 386

The 386 is truly a second computer functioning independently inside your Macintosh. The dedicated 16 Mhz Intel 80386sx processor and 1 Mb of on-board RAM (expandable to 16Mb) assures that your 1 Mb programs execute with maximum compatibility. We loaded the Orange 386 with innovative features, including two PC/AT bus slots which allow you to add IBM PC cards inside your Macintosh. This capability opens the broad range of PC cards for the Mac.

Orange 386 .....\$1695





**Dove DoveFax Plus** 

DoveFax Plus offers the most sought-after fax software features such as full background operation when sending or receiving a fax (with or without MultiFinder); automatic answer, which allows you to receive a fax without interruption; redialing, which guarantees fast delivery; pre-scheduled transmissions, that allows you to send

multiple faxes after hours when rates are lower; customized cover sheets and more! With the DoveFax Plus, your Mac turns into a personal voice messaging system, as well as a full-featured fax machine. The DoveFax Desktop can be upgraded to the DoveFax Plus with the simple addition of a microphone and software.

DoveFax Plus ......\$395

### LISI Sales & Marketing Manager

In this world of fast paced markets and even faster paced sales, you must have the marketing software to keep up with the world. Sales and Marketing Manager is a five part program that improves your control of all sales and marketing. It allows you to set up individual companies or divisions. Whether you are one sales person working for many companies or one company with many divisions you can now keep full control.



Sales & Marketing Manager .....\$295

### TORAGE MEDIA

Sony Corp. Of America
10 Pk DS/DD 800K12.
10 Pk DS/HD 1.44Mb 19.
50 Pack DS/DD 800K 39.
50 Pk DS/HD 1.44Mb 75.

### FREE Smac-A-Mac

(\$8 Value) for every purchase of \$500 or more

### 1-800-248-080

Mon - Fri: 8am to 1am Eastern Time 5am to 10pm Pacific Time 9am to 9pm Eastern Time Sat & Sun 6am to 6pm Pacific Time





- Major credit cards accepted. No surcharge.
   Your credit card is not charged until your order is shipped. If we must ship a partial order, freight is not charged on the back order.
- not charged on the back order.

  COD orders are accepted: Limit \$1,000 per order. Cash or bank check accepted. All check or
  putchase orders must have a phone number in order to be processed. Add \$5 per order.

  Most personal and company checks that are received with order will clear immediately.
- Educational, government and corporate purchase orders are accepted.
   All U.S. shipments insured at no extra charge.
   No sales tax except for WA residents (add 8.2%).

- Prices and product availability subject to change without notice
- All products covered by 120 day limited warranty.
   Availability guarantee does not apply to unreleased items and monitors.
- Shipping S3 per order. We ship Airborne Express overnight service. (Some rural areas require an extra day) -Orders placed by 9 pm EST (6pm PST) weekdays for 'in stock' items will ship that day for overnight delivery (barring system failure, etc.).
- APO/FPO/PO box orders shipped 1st class U.S. mail.

  Defective software will be replaced immediately, and hardware will be replaced or repaired at our
- Most products carry a 30-60 day money-back guarantee, Call 1-800-248-9948 for return authorization number.
   Due to the advanced printing of this advertisement, our prices may change. We are committed to offering low prices and product availability so call for our most current prices
- Customer Service: 1-800-248-9948, Weekdays: 10am-9pm EST, 7am-6pm PST.

MacZone 18005 NE 68th st., Suite A110 • Redmond, WA 98052 USA (206)883-3088 • 800-248-0344 • (206) 881-3421

### MODEMS & FAX

	MIODE
Abaton Technology Corp InterFax 12/48 Faxmodem . 264 InterFax 24/96 Faxmodem348.	
Applied Engineering DataLink Mac Internal	Everex Sys EMAC 2400
2400 Baud208 w/ MNP 5235	White Knig
w/ MNP 5 and SendFax 269 DataLink Express External 2400 Baud	Communic TelePort AL
w/ MNP 5 and SendFax 235 DataLink LC Internal 2400 w/ SendFax245	Hayes Smartcom
2400 v.42 bis w/ Sendfax 265 CompuServe Navigator 3.0	Mac Mode
Starter Kit22	

ĺ	MUDEMS & FA
	Dove Computer Corp           Dove Fax 24/96         298.           DoveFax Plus         395.
	EMAC 2400 w/MNP 5 175.
	FreeSoft Co. White Knight 11
	Global Village Communications TelePort ADB 2400 MNP 5 . 128. TelePort ADB SendFAX 184.
	Hayes Smartcom II 3.183.
	Microcom Mac Modem V.32 MNP 9 688.
	Orchid Technology

Orchid Fax Modem 96/96 .. 428.

Programming		
Digitalk	Serius	
SmallTalk/Vmac123.	Communication Objects 64.	
Mainstay	Symantec	
V.I.P85.	Think C 4.0 164.	
Microsoft Corporation	Think Pascal 3.0 164.	
Quick Basic 1.063.	Just Enough Pascal51.	
Paragon Concepts	TGS Systems	
Qued-M85.	Prograph 2.0 W/Compiler 244.	
Serius Corporation	True Basic	
Serius Developer	True Basic 2.0254.	
Serius Programmer 210.	Zedcor, Inc.	
Serius Animation Objects 64.	ZBasic 5.098.	

Preferred Publishers
Double Talk78.
Double Talk Twin Pack 128.
Prometheus
External Modems
2400 Mini128.
2400 w/ MNP 5218.
Internal Modem
2400 w/ MNP 5245.
Tavel Modem 194.
ProModem DateFax Series
9600M Plus598.
24/96 MiniFax208.
24/96 Send/Receive Fax 308.
Shiva
Netmodem V2400350.
Netmodem V.32 9600 1,165.
Software Ventures
Microphone II 3.0214.
Solutions
BackFax152.
Faxgate Plus 1.1238.
Supra Corporation
Supra 2400 Baud Modem . 118.
Supra 2400 MacPac 178.
Syneray Software

Versa Term 4.1...

U.S. Robotics

Versa Term Pro 3.0 ..... 173.

Courier Hst Dual Std V.42 .. 995.

Courier Hst Std V.42 ...... 675.

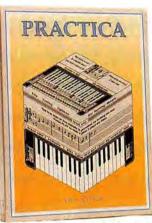


## Over 1600 products for your Mac



ResumExpert
Advance your career with professional help. ResumExpert creates job-winning resumes for students to CEO's. Designed by a resume-writing pro, the ResumExpert Software Series is an impressive collection of eye-catching resume and cover letter tempaltes for Microsoft Word 3.0 or 4.0 and WriteNow 2.2. Each of the 10 editions provides over 40 distinctive and completelyformatted layouts. Easy to use - just select the appropriate template and replace the text with your own information. The highly-rated manuals provide expert tips for composing professional-quality resumes and cover letters quickly. MacUser rated ResumExpert a 1989 Top 200 Software Product and awarded it 4 mice!

ResumExpert ......\$47



### Ars Nova **Practica**

Musica 2.2
Practica Musica 2.2 teaches you how to identify by ear two types of musical sounds, intervals, and chords. Version 2.2 now offers training for seventh chords and their inversion, plus advanced lessons in ninth, eleventh, and thirteenth chords. It also teaches the elements of music theory related to intervals and chords. Your Mac serves as the ever-patient drill instructor. It plans either through the Mac's sound chip, or any MIDI synthesizer. Includes Windows on Music, a coordinated music fundamentals toolbox.

Practica Musica 2.02 ...... \$68

### EDUCATION

Addison-Wesley Inside Mac Vol 1 - 5	Calculus Type! Carina S Voyager Davidson
Companion 2	Alge Blas Math Blas Earthque Earthque
Mastering WingZ	Mac Bible Mac Bible Mac Bible Macintos
Alphabet Blocks 1.1029. Talking Tiles 1.0.225.	Great Wa KidsMath NumberN

### Geometry, Physics 57. oftware 1.2 n & Associates ter Algebra Plus .... 35. ster Mystery ..... st, Inc. st (HyperStack) .... n & Blair e/What Do I Do/Sof 33

Mac Bible + What Do I Do 27
Macintosh Bible 3rd Ed 19
Great Wave
KidsMath/Kids Time ea. 25
NumberMaze B&W ea. 25

Hyperglot Software Co.
Spanish, French, German .
Italian, Russian
Word Tortureea
Spanish, French, German
Pronunciation Tutor ea
Verb Tutor ea
Spanish, French

Russian Verbal Aspects	41.
Russian Noun Tutor	58.
Japanese Easy Kana	128.
Japanese Karji Master	104.
Individual Software	
Training for PageMaker 4.0	.29.

#### Individual Software Typing Encore 3.5 .... Learning Company Math Rabbit Reader Rabbit 2.2 ... Nordic Software MacKids Preschool pack ..... 35. Turbo Math Facts ..... Word Quest ..... Penton Overseas -Vocabuleari French 1 or 2 ....

German 1 or	23
Italian 1 or 2	3
Japanese 1 c	r23
Spanish 1 or	23
Personal Tr	aining Systems
Tutorials for:	
HyperCard 2	.05

rersonai iraining syste	ms
futorials for:	
HyperCard 2.0	51
FileMaker Pro	51
QuarkXPress3.0	51
PageMaker 4.0	51
Freehand	51
Persuasion	51

Personal	Training	Systems

	Excel51.
	Word51.
	Works51.
	Mac Basics51.
	Simon and Schuster
	Typing Tutor IV28.
	The Software Toolworks
	Mavis Beacon
1	Teaches Typing31.
	True Basic
	Algebra39.
	Arithmetic39.
	Discrete Mathematics 39.
	Pre Calculus / Trigonometry 39.
	Probability Theory39.
	True Basic Calculus 3.02 39.
	Truestat39.
	Visionary Software
	Synchronicity38.
	7-nd-max

mac Bible NIV, KJV, RSV .... mac Bible Greek, Hebrew ....

### Hyperware & CD's

Activision	Microsoft Corporation Office CD ROM
Cosmic Osmo CD ROM 45. Manhole CD ROM 33.	
Aldus/Silicon Beach	ADDMotion182.
Super Card 1.5 198.	QLTech (Quantum Leap)
Claris	Macadamia CD-ROM73.
HyperCard 2.0 Dev. Kit 139.	GigaROM CD-ROM98.
Farallon - Media Tracks	CD7 CD-ROM49.
Multimedia CD ROM 318.	Somak
Hyperglot Software Co.	Script Edit43.
Learn to Speak Spanish 60.	Wayzata Technology Inc.
Learn to Speak French 60.	Middle East Diary85.
HyperPress Publishing	All Of Mac Tutor 155.
Icon Factory 1.1 44.	Baseball Guide& Reg 155.
Script Expert 1.0 44.	CD Funhouse39.
Script Library 2.056.	Disc Tracy Prog Detec 85.
ICOM Simulations	GEM (Public Domain)
Hypertmon57.	Seals Of The US Govt55.
Individual Software	The CIA World Factbook 78.
Power Macros/HyperCard 34.	The USA Factbook 1990 85.

### ENTERTAINMENT

Professor Mac

Tense Tutor

Intro to Russian.

Accolade
Ishido: Way Of Stones 32.
Stratego29.
Brøderbund
Sim Earth39.
SimCity Color46.
The Playroom28.
Carmen San Diego? ea 28.
Electronic Arts
Starflight39.
Weaver Baseball 1.533.
FTL Games/Software Heaven
OIDS29.
Inline Design
Darwin's Dilemma31.
Tesserae 32.
Lucasfilm Games
Indiana Jones - Last Crusade 33.
Sphere - Spectrum Holobyte
FacesTris lii
Tetris (B&W And Color) 20.



**M**ULTI-MEDIA

Aapps	Digital Vision
DigiVideo - B&W348.	Computer Eyes - Color 348.
Micro TV250.	Computereyes - B/W 194.
Bright Star	MacroMind
Hyper Animator 1.5.2 97.	MacroMind Accelerator 124.
Interface248.	MacroMind Director 2.0 437.
Farallon	MacroMind Media Maker 325.
Multimedia Pack	Paracomp
Gold Disk	Film Maker438.
Animation Works 122.	Raster Ops
MASS Microsystems	ColorBoards 364
QuickImage 24 748	w/Director 2.0 1,295.

QLTech Giga-Rom, Macademic, or CD7

Giga-ROM is the largest collection of Macintosh software ever assembled. Files are archived in Bill Goodman's "Compactor" format and indexed with On Location. Macademic is 7,500 programs and related files for Education and Instructional use. Subjects range from the arts to the sciences. CD7 is The largest non-compressed collection of Macintosh software. Over 15,800 files including art, games, demo, and music files with digitized sounds.

Giga-Rom	\$98
Macademic	\$73
CD7	

### Call for products not listed



DATA RECOVERY HARD DISK BACKUP DISK OPTIMIZATION FILE MANAGEMENT

Critical Haid Softman

Central Point Software Mac Tools Deluxe

Mac Tools provides utilities for data recovery, file protection, and disk management. You can make backups of your hard disk whether on Apple tape drive or a set of floppies. Other utilities in the collection undelete accidentally-erased files, recover damaged files, compress files, defragment files, and encrypt them. A DA finds "lost" files fast.

Mac Tools Deluxe ...... \$78



ASD Software FileGuard

FileGuard 2.5 protects your hard disk from unauthorized access. With it, you can limit access privileges to specific folders (including the system Folder), to particular users or work groups, and create "drop folders". FileGuard prevents others from copying or erasing the contents of your hard disk and offers password protection for your

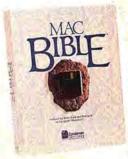
FileGuard ......\$138

ALL NOW •

### RUSINESS & PRESENTATION

DUSINES	O CLI RESENTAL
Aldus/Silicon Beach Persuasion 2.0	Mainslay         MacSchedule 2.0         138.           Mac Schedule Plus 1.0         198.           MediaLab         PictureLink1.0         215.           PictureLink1.0         215.           Microsoft Corporation         123.           PowerPoint 2.01         244.           Excel 2.2         244.           Office         524.           Works 2.0         178.           Newton Technology Inc.         GEOvista           GEOvista         169.           Odesta         458.           Double Helix III 3.0R6         388.           Power Up         Fast Forms 2.0         104.           Preterred Publishers         Database 1.5         66.           Direct Mail         50.         Prescience           Expressionist 2.03         78.           Theorist 1.1         250.
Informix         244.           WingZ 1.1a         244.           Inman Software         95.           Business Plan Toolkit         95.           Jam Software         62.           Kiwi Software         KiwiEnvelopes!         33.           LISI         Sales & Mktg Manager         295.           Mainstay         Mac Flow 3.5         168.	Satori Bulk Mailer 3.2.3

Storm Technologies	
Picture Press	120
Strategic Mapping Inc.	
Atlas * MapMaker 4.5	368
Symantec	
More 3.0	264
Symmetry	
Key Plan	264
Mariah	
Synex	
MacEnvelope 5.0	56
MacEnvelope Plus 2.0	158
Westware Inc.	
Contact Ease	245
Williams & Macias	
Sticky Business	50
My Disklabeler III	
Wolfram Research, Inc	
Mathematica Enhanced	698
Mathematica Standard	448
Zedcor, Inc.	
Desk 3.03	228



ZonderVan Electronic Publishing macBible

ZonderVan macBible presents several different versions of the Bible to help you understand its meaning more clearly. macBible quickly finds the passage you want to study. It can open five text windows and one special purpose window at once. Three study modes open the Bible to your questions. The word-and-

phrase mode locates individual words, phrases, and groups of words. The verse modes displays any range of verses by book, chapter or verse. The Count mode displays statistical information about words or groups of words to complete your study.

macBible.....\$58

Aladdin Systems	
Shortcut	
Stuffit Deluxe 2.0	62.
Alsoft	
DiskExpress II	56.
ASD Software	
FileGuard	138.
Baseline Publishing	
APB Express Tape	58.
INIT Manager	
Talking Moose	23.
Beagle Bros. Inc.	
Flash	126.
Berkeley Systems De.	
After Dark 2.05	
Stepping Out 2.02	48.
Casady And Greene	
QuickDEX	33.
CE Software	
DiskTop 4.0	
Quick Keys 2 Version 2.	
Central Point Softwar	_
Mac Tools Deluxe	78.
Custom Applications	
Freedom Of Press 3.0	
Freedom Of Press Light	55.

UTILITIES		
Dantz	J	
Retrospect 1.2 147.		
Retrospect 1.2 w/Remote 264.	i	
Dariana Technology Group		
Mac Sleuth System Profiler . 85.		
Dublclick Software		
ClickChange40.		
Fifth Generation		
Disklock 2.0 117.		
Fast Back II 2.5 117.		
Powerstation 2.5		
Pyro! 4.024.		
Suitcase II 1.248.		
SuperLaserSpooler 2.02 92.		
SuperSpool 5.061.		
ICOM Simulations		
Mac Kern58.		
On Cue 1.334.	H	
Insight Development Corp		
MacPrint 1.2		
Kent Marsh		
Macsafe II 106.		
Night Watch 84.		
Quicklock 2.056.		
Kiwi Software		
Kiwi Finder Extender 64.		

La Cie Limited	Ī
La Cie Serial Talk (Single) 1	115
Loop Software	
Picture Book	38
Microcom	
911 Utilities	.88
Virex 3.0	.58
Microseeds Publishing	
Screen Gems	.38
INIT Picker 2.0	
Redux	48
Now Software	
Now Utilities	.74
Power Up	
Address Book Plus 2.0	.51
Calendar Creator	.34
Salient	
Disk Doubler 3.0	44
Symantec	
S.A.M. 2.0	. 66
S.U.M. II	
Norton Utilities	. 83
Tactic Software	
MasterFinder	.49

Timeslips III 2.0
Timeslips III for the Mac is the ultimate time tracking and billing software system. With it you'll find that your workday is being spent more productively, and that your billings are much more complete. The features and functions are so simple, they practically run themselves.

Timeslips III ... \$194

### INPUT AND OUTPUT DEVICES

Articulate Systems Inc. Voice Link
DataDesk Mac 101 Keyboard ADB 128. Switchboard
Dest Scanner W/Recognize 685. Hewlett Packard
Deskwriter (300 DPI) Printer758. Kensington Turbo Mouse (512K & Plus)108.
Turbo Mouse ADB108.

Page 6-5/91

_	the state of the s
	eytronics Nac Pro KB-105 ADB 117.
K	odak
D	Diconix B&W Printer 488.
D	Diconix Color Printer 1,100.
L	ogitech
S	canman Model 32 338.
N	licro Touch Systems
	InMouse180.
N	licroSpeed Inc.
	MacTRAC (512/Plus) 60.
	MacTRAC TrackBall ADB 74.
N	louse Systems

Little Mouse A+ (512/Plus) .. 74.

Mouse Systems Little Mouse For ADB74.
Olduvai
Read It! OCR 2.1274.
Read It! Personal 2.1 138.
The Complete PC
Full-page Scanner757.
Half-page Scanner294.
Thunderware
ThunderScan Plus198.
Lightning Scan 400 384.
WACOM - Graphic Tablets
Complete line available Call.

### Brøderbund **Kid Pix**

Kid Pix is an amazing paint program created just for kids. It combines special effect art tools. picture stamps, sounds and magic screen transformations to turn the computer into a magical art studio. And with Kid Pix, you don't just paint a masterpiece. you hear it too! Every brush and tool has its own unique sound effect. You can even record



greetings, poems or music to enhance your creations

Kid Pix .....\$31



FilmMaker

### Last chance to stock

**Prices will never** 



The Eddy Award winning FilmMaker is the masterful animation and multimedia graphics program. This amazing application allows the user to create professional quality presentations and animations quickly and easily! What takes hours to create in other applications can now

be done in just minutes with FilmMaker. Whether you're a professional animator who wants to create stunning effects for video, or just someone who wants to put their ideas in motion FilmMaker is the ultimate answer.

FilmMaker ......\$438

**Microtouch Systems** UnMouse

The UnMouse does everything a mouse can only faster, easier, and in less space. To move the cursor, simply slide you finger over the glass surface:; to make a selection, merely press down. The UnMouse also serves as an extended keyboard. Tap the large red button and you instantly have a Power Keypad with 16 keys available to execute macros (60 in advanced mode). With its one million touch points the

UnMouse also performs admirably as a graphics tablet.



UnMouse .....\$180



display information on all mounted drives MasterFinder .....\$49

view, the "Pane" View, consists of four panes that can



MasterFinder

### Pixar MacRenderMan

Honorable Mention - 1990 MacUser Editor's Choice Award for Best 3-D Modeling/Rendering Package. Combine any 3-D program to create photographicquality images with most advanced rendering

MacRenderMan .....\$630



### Toyogo Nemesis GO MASTER Deluxe

Go combines Japanese philosophy and business strategy into their national game. Go Master Deluxe, winner of the Chaos Manor Users Choice Award (Byte 1990), unites the Go playing and teaching abilities of Go Master, the corner-opening tutorial, Joeski Genius, and the life and death consultant, Tactical Wizard

Nemesis GO MASTER ..... \$94

### Music

Ars Nova Practica Musica 2.2 68. Bogus	OpCode Systems Inc. MIDI Play
Super Studio Session 2.0 64.  Coda Finale 2.5	MIDI Interface         84.           Sound Exciter         48.           MasterTracks Pro 4.0         318.           MIDI Transport         275.           Note Writer II         318.
Mark Of The Unicorn, Inc           Performer 3.5         375.           Pro.Composer 2.3         375.           OpCode Systems Inc.           EZ Vision         99.	PG Music         Band-in-a-Box         57.           Tactic Software         Sound Clips 1-4         ea. 48.

### Pantone, Inc. Pantone Process Color Imaging Guide The PANTONE Process Color Imaging Guide

is the perfect companion to all Pantonelicensed software programs. It provides a visual comparison of soild PANTONE Color and process simulations as thay would appear on the final printed piece. As many PANTONE Colors cannot be satisfactorily reproduced in four-color process, this publication provides the user with the information to best decide whether to specify spot of process color while working on the desktop.

**Pantone Imaging** Guide .....\$48

### E-Machines Retail



Video Board	s & Monitors
E-Machines Retail Full Page Color System T-16 8-bit for Mac II 16" 2275. T-16 24-bit Mac II 16" 4140. Compact 2-Page Color System TX 16" 8-bit, MacII, si 3450. TX 16" 24-bit MacII, si 4150. TX 16" 24-bit MacII, si 4150. TX 16" 24-bit MacII, si 4575. TX 19 8-bit II, Si, SE/30 4575. TX 19 24-bit MacII 5695. Lapis Technologies, Inc. Classic Monitor 649. Mac Plus Monitor 679.	Rival Monochrome Monitor   19" MacII, SE, SE/30
MegaGraphics           16" Color Systems           8-bit Hi-Res MacII         2,590.           8-bit Hi-Res MacII         4,890.           24-bit Hi-Res MacII         4,890.           19" Color Systems         4,295.           24-bit Hi-Res MacII         6,390.           5ray-Scale Systems         19" Bit MacII         1,875.           19" 8-bit SE/30         1,895.	Sigma Designs   L View Multi-Mode   For MacII family   1,475.   5E/30 & IIsi   1,475.   Pageview Series   Pageview GS IIci & IIsi   649.   Pageview Mac II Monitor   850.   Pageview SE Monitor   850.   Pageview SE/30 Monitor   850.   Silverview Mac II   1,850.   Colormax 24   4,350.   Colormax 24

THE MACZ

### up on SIMMS

be this low again

Jasmine 40 MB **Portable Hard** 

Jasmine Technologies has consistently finished first in the MacUser Lab's Buyers Guide and we've been praised in every major Macintosh publication for the quality of our drives and for the ease of use in DriveWare, our custom drive utility, DriveWare, provides the best SCSI partitioning, password protection, error correction, diagnostic and help



software. 40 mb Portable Hard Drive ...... \$299 40 Mb for Mac II, IIx, and IIfx .....\$349



### PLI CD-ROM **Adobe Type-**On Call

The PLI CD-ROM is the most fully featured drive available. It has a self-cleaning objective lens, eliminating bothersome dust problems and offers audio output through a 1/8 headphone jack and two RCA jacks. Volume control for the headphones is provided by a convenient dial on the front panel. PLI software is compatible with virtually every CD-ROM drive on the market, and supports all of the HyperCard audio XCMDs. It also allows channel control

on those drives which support it. Included with the CD-ROM is Adobe

CD-ROM and Type-On-Call ...... \$775



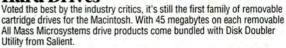
**Dest Personal Scan** 

The DEST Personal Scan is the first scanner to combine full-page, one pass, hand-held scanning with sheetfeed scanning in one desktop unit. Now you can easily read almost any document into your computer: books, manuals, technical documents, even oddly-shaped or over-sized originals are no problem with the full-page, hand-held unit; or place it into the automatic document feeder and scan up to 10 pages at a time, fully unattended, for real productivity. And Best of all, the Personal Scan comes bundled as a kit that includes everything you need to begin scanning today such as: high quality 300 dpi scanning resolution, powerful Recognize! omnifont OCR, graphics capture, cables and interface, one year warranty and comes in MAC and PC

Personal Scan with Recognize .....\$685 Recognize OCR Software ......\$515







DataPak	\$724
DataPak IIcx	\$778
Quick Image	\$748

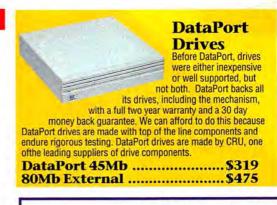
DATA	STORA	GE D	EVICES
------	-------	------	--------

The state of the s	۰
Applied Engineering 3.5" 800K Disk Drive 194.	
3.5" HD 1.44Mb Disk Drive.228.	
CD Technology, Inc	
Porta Drive CD ROM Drive . 648.	
CRU - Data Port	
45 MB319.	
80 MB475.	
Cutting Edge	
20 Mb Ext328.	
30 Mb Ext	
45 Mb Ext	
60 Mb Ext488.	
80 Mb Ext	
Dayna Communications Inc	
DaynaFile II 360K	
DaynaFile II 1.2Mb 445.	
DaynaFile II 1.44Mb 445.	
Everex Systems - EMAC	
150 Tape Backup Drives 895.	
60 Tape Backup Drive 658.	
Impact w/Norton Utilities	
20 Mb385.	
40 Mb Hd520.	
80 Mb Hd750.	
105 Mb Hd 805.	
170 Mb Hd1,305.	
Datacell	
Quantum External	
40 Mb Ext399.	
105 Mb Ext 589	

Datacell
Quantum Internals
40 Mb\$349.
105 Mb\$529.
La Cie Limited
Tsunami 40 Mb595.
Tsunami 50 Mb LPS 645.
Tsunami 80 Mb 815.
Tsunami 105 Mb 865.
Tsunami 100 Mb LPS 915.
Tsunami 120 Mb1,125.
Tsunami 170 Mb1,225.
Tsunami 210 Mb 1,325.
Mass Micro Systems
DataPak724.
DataPak IICx 778.
DataPak MO3424.
NEC
Intersect CD-ROM Drives
CDR-73 CD ROM Drive 665.
PLI
Superfloppy 1.4 448.
Turbofloppy 1.4 (1.4 Only) 298.
CD-ROM Drive750.
w/Type on Call775.
Removable Drives
Infinity "88"Call
Infinity40 Turbo748.
Infinity40/40 Twin 1,475.
Optical 600 Mb3,794.
Optical Cartridge235.

Turbo 250 Mb Ext	1,725.
PLI	
Turbo 300 Mb Ext	1,975.
Turbo 600 Mb Ext	2,750.
Rodime Systems	
Plus 20 Mb Ext	299.
Plus 45 Mb Ext	449.
Plus 45 Mb Rem	589.
Cobra External	
45 Mb	550.
70 Mb	795.
100 Mb	860.
210 Mb	1,295.
330 Mb	1,895.
650 Mb	2,775.
Cobra Internal	
45 Mb	410.
70 Mb	675.
100 Mb	735.
210 Mb	1.165.
330 Mb	
Syquest	
Syquest 44 Meg	74.

Look for IDS Pro Drives & WIP Drives - Next month at MacZone.



### LaCie Tsunami 40 mb Drive

Tsunami drives come initialized with SilverLining, the standard of hard disk utility software, and SilverPlatter. Apple's system, five megabytes of public domain software and Norton Utilities are also included on the drive. Ask your MacAdvisor about the new 2 plus warranty on Tsunami drives.

Tsunami 40 mb Drive ......\$595



a Macintosh, be careful what you say- it may be listening!



Please circle 89 on reader service card.

### The Authority of Voice



Why have we been using keyboards and mice?
Because there hasn't been any faster or cheaper way to tell a computer what to do. A new technology is ready to change all that — and it's more than just talk.

hroughout the history of computing, years of effort and millions of dollars have been spent in pursuit of the perfect input device. Keyboards, light pens, joysticks, trackballs, mice, and more have all been tried. Only the keyboard and mouse have showed true staying power.

More recently, OCR (optical character recognition) software and even handwriting-recognition software have made news. But as fads and fashions have come and gone, one technology has remained elusive: the Holy Grail of input technology — voice recognition.

Visionaries have long predicted the coming of voice-controlled computers. Even the most jaded user would agree that truly efficient and effective voice recognition would make computers more accessible (John Dvorak might not agree, but he's more jaded than most).

As the Mac is to a character-based system, a voice-controlled system would be to the Mac: a true computer for the rest of us. Every user—and even potential user—who has ever watched "Star Trek" has yearned for a voice-activated computer like the Enterprise's.

Although highly advanced voice recognition is still a few years away, voice recognition is already here. Like many innovations, it didn't come from a giant corporation — it came from a modest startup company, Articulate Systems, which is committed to advancing this technology.

Articulate Systems has been unusually successful at getting recognition for voice recognition. The 1989 *MacUser* Editors' Choice Award for most significant hardware product went to Voice Navigator (see "Editors' Choice Awards," March '90, page 92), and the 1990 Eddy for best input device (see "The 6th Annual Editors' Choice Awards," March '91, page 97) went to Voice Navigator II, which is smaller, less expensive, easier to use, more versatile, and more advanced.

### A Sound Product

Although Voice Navigator II falls short of Mr. Spock's standards, it's a good start. You can't use it as a dictation device, and the technology is a long way from that level. For some time, the keyboard will remain the primary way to get words into your Mac, with scanners and OCR a practical alternative for inputting large quantities of information.

Voice Navigator excels with short phrases such as commands, making it a mouse alternative rather than a keyboard replacement. You can execute menu items without ever lifting your fingers from the keyboard.

Voice Navigator can also serve as a mouse extension. Have you ever been working in a program with a tool palette (such as Page-Maker) and wanted to change tools without dragging the mouse all over the screen and back? This product lets you say "pointer" and the cursor instantly switches to the pointer function. If you have a large-screen monitor or a multiple-monitor configuration, this feature alone makes Voice Navigator worthwhile.

You can link Voice Navigator to various actions, which is rather like using a macrorecording program such as QuicKeys. There are also add-ons such as VoiceWaves, a collection of macrolike instructions for specific programs. To implement VoiceWaves, you simply teach it to recognize your voice.

#### For Offices, Not Cubicles

Although Voice Navigator is an excellent product, voice recognition is no panacea. John Dvorak has described a sea of desks occupied by people talking to their computers. This conjures up images of offices where the air rings with "No, don't type THAT!" and "Don't listen to HER, listen to ME!" He has a point. Voice-input products are not suited to open-office environments. Voice Navigator's sensitive microphone, for example, although somewhat directional, occasionally picks up extraneous sounds that it treats as commands. Background noise can sometimes mask your voice, rendering the product less useful. Having to repeat commands can get old fast.

In addition to the technical problems of background noise, voice recognition presents psychological problems. Some users feel self-consciousness when talking to a computer, especially if others can hear them. Even if the technical problems are solved, voice recognition is likely to remain more of an option for people who have some privacy.

There's also a problem with yelling. When misunderstood, people tend to repeat themselves more loudly, especially when they're giving commands. This has two effects. For one thing, your voice is different when you shout, so the louder you speak, the *less* likely the hardware is to understand you. This leads to a cycle of shouting louder and louder, which can be like dealing with a petulant child who refuses to obey you until after you've calmed down. When you've regained a normal speaking voice, your commands are recognizable

## Q. A.

The Outbound™ is the smallest, lightest, Macintosh®-compatible laptop computer available anywhere — and it's affordable!

## What weighs 9 pounds, fits on an airline tray table, works like a Mac, and is available now?

The Outbound Laptop System.



Call 1-800-444-4607 today to find out about our standalone plug-and-play configuration (with Plus ROMs installed).



The Outbound name and logo are trademarks of Outbound Systems, Inc. Macintosh is a trademark of Apple Computer, Inc.

Please circle 134 on reader service card.

### RETROSPECT



### To Go Forward You Must Backup

On the Macintosh, creation and storage go hand-in-hand. You create. Then you store. Pretty soon, your hard disk is full of files--each one vulnerable to a hard disk crash. Retrospect will protect your creativity. And offers more than any

other backup software: Archiving. Archive files to keep your storage needs in check. Retrospect supports almost any storage device and has compression, encryption, and full file selection. Run it automatically with a built-in calendar.

Retrospect. The Best Backup for Your Creativity.





CALL OR FAX CALL: (415) 849-0293 FAX: (415) 849-1708

Please circle 133 on reader service card.

### **ROBERT WIGGINS**

and are thus obeyed once again.

There are tricks that help overcome some of these problems. You can nest commands so that it takes two or more commands to execute an action. This prevents commands from being executed accidentally when you're talking to someone else or you're on the phone and don't realize that the computer is listening. This is an excellent idea if you plan to implement commands such as Erase Disk or Shut Down. Of course you can get even greater safety by not teaching Voice Navigator such commands.

Another trick takes advantage of the way Voice Navigator II uses three samples of your voice to learn a command. If you use three different volume levels (or distances from the microphone) when recording your samples, you increase the probability of being recognized when you raise your voice or move around.

#### A Sound Future

At the current level of technology, voice recognition has moved beyond novelty into the realm of utility. It is now more than a toy. After you're used to the Voice Navigator, you won't know how you lived without it. You can also visualize how much further voice recognition can go.

Voice recognition can make changes in the way you do business. Some changes may be for the better, such as an integrated voice-and-electronic-mail system or the ability to control your Mac remotely via telephone. This capability would let you call your Mac and have it fax an important document to wherever you are in the world.

Other voice-recognition-related changes can be costly. Open offices and cubicle systems are less practical if everyone is talking all the time, for example, so expect to need better soundproofing. Offices may even have to be redesigned.

You can bet that voice-recognition systems will play an increasing role in the proliferation of computer systems. As technology advances, costs decrease, and software that exploits new capabilities is developed, voice recognition will become an integral part of the concept of computing. When you can turn to your computer and instruct it, "Get that guy from Cleveland on the phone, and show me the Chicago figures" and have it not only understand your oblique references (What guy from Cleveland? Which Chicago figures?) but also obey you instantly, voice recognition will have enabled the next computer revolution.

# How Do You Improve On \$\$\$\$ OCR?



## Introducing WordScan.

We took the phenomenal accuracy that earned TopScan<sup>™</sup> its coveted five-mouse rating, added features that make it even easier to use, priced it under \$600, and called it *WordScan*.

With the industry's highest accuracy

rate, WordScan saves you the time you'd spend correcting mistakes ordinary OCR makes. Because it's so much more accurate, WordScan glides through draft dot matrix, laser print, faxed or photocopied documents that stymie less sophisticated OCR software.

OmniPage Owners Upgrade To WordScan Plus For \$149.

If you own any Macintosh version of OmniPage, you can upgrade to WordScan Plus for only \$149. Check with your dealer for details,\* or call Calera at 800-544-7051.

\* Limited time offer

And WordScan's more powerful new features make it even faster and easier to get anything you can scan directly into your word processing, database, page layout or spreadsheet program.

With *Deferred Processing*, you can scan things in quickly, walk away and let them process while you do something else.

The Pop-Up Verifier, a WordScan Plus exclusive, lets you proof right on the screen instead of searching through your original copy. Overall throughput is faster.

\*\*AutoClipping™\* automatically clips and files graphics while WordScan Plus processes text.

And WordScan Plus' unique *Style Sheet* automatically overrides existing layouts with your new one.

Call 800-544-7051. Get the name of your Calera dealer and get a demonstration of the world's most accurate OCR.



The Most Accurate OCR At Any Price.



## Introducing a big improvement over this basic piece of disk handling equipment.

Meet Jukebox Five,™ the handy new disk exchanging machine that takes the manual



Jukebox Five snaps onto your Mac in seconds.

labor out of loading and unloading diskettes. Jukebox Five hooks up to your Mac\* in seconds and works its way through a stack of up to 15

disks—automatically. It's the most amazing time-saver since the introduction of the tape drive, without the high price.

Jukebox Five is compatible with virtually

any Macintosh software, including the topselling backup program, Fastback II.™ So unattended disk backups are a snap. And it comes complete with a time-saving utility program that lets you format diskettes,



Load it and leave it to process up to 15 diskettes.

copy from hard disk to floppies and duplicate multiple disks without even being there.

To find out more about Jukebox Five, call 1-800-873-4384. Buy Jukebox Five and get a free box of diskettes. Just write



Use it to back up, copy, or format automatically.

"diskettes" on the registration card and return it to us. This is a limited-time offer, so get your hands on one today.

\* Fits Macintosh models SE/30, II, IIcx, IIci and IIfx Fifth Generation Systems, Inc. 10049 N. Reiger Road Baton Rouge, LA 70809 Tech Support: (504) 291-7283



Please circle 103 on reader service card.

### **In Praise of Prodigy**



Prodigy, the
easy-to-use
(albeit leisurely)
electroniccommunications
service sponsored
by IBM, has turned
out to be a chip off
the old block —
but is that actually
bad for Mac users?

ear Editor: I was vastly disappointed by Guy Kawasaki's column regarding Prodigy in your May issue. His column was filled with technical errors, misinterpretations of our actions, and illogical and unsupported conclusions about our very fine advertising service.

He, like many other people, does not understand Prodigy's purpose: To serve as an advertising medium—not as a channel of communication. As an advertising medium, we have every right to run our service as we see fit for the majority of our subscribers.

William Whitebread Prodigy Services Upstate New York

(I know that this month's column will generate this kind of response from PR flacks or Prodigy executives. Rather than give them the satisfaction of writing this letter, I thought I'd write it in advance. Foiled again, IBM.)

This month my column is about Prodigy and its recent actions to control its subscribers. To make a long farce short, Prodigy is an electronic bulletin-board system created as a joint effort by Sears, IBM, and CBS. (CBS dropped out later when Brent Musburger couldn't figure out how to sign on to the system.)

A controversy recently erupted between Prodigy and some of its subscribers because of Prodigy's censorship of public messages, initiation of charges for private E-mail messages when they exceed a certain quantity (initially E-mail services were free, but then the volume got too large, so Prodigy changed its mind), and termination of a few dissident members.

As you would expect, the computer press has leapt up and condemned Prodigy for these kinds of actions and alleged actions. Highly respected gurus such as Steve Levy and Jean-Louis Gassée have trumpeted human rights, free speech, and plain old common sense loudly in *Macworld* and *MacWEEK*. Can I tell you something? They've got this all wrong — Prodigy has done a great thing for Macintosh.

#### The Prodigy Way

How's that? Well, Prodigy has given the Macintosh community concrete, irrefutable, and powerful evidence of Prodigy's (and by extension, IBM's) philosophy of personal computing. This philosophy of control and censure is completely contrary to personal computing's raison d'être: empowerment, communication, and creativity. It's wonderful ammunition to use against the IBM PC and

everything it's come to stand for.

Prodigy wants to control things, and it's perfectly within its right to do so. But you have to wonder what it thinks of personal computing. To me, it's scary, and I would never buy a personal computer from a company that had started a company such as Prodigy. The fruit never falls too far from the tree, as they say.

Think about it: The next time you hear, "I'm thinking of buying an IBM PC," you don't have to limit your retort to the standard stuff: "The Mac's easier to use and has cooler, nicer columnists and better software." Now you can say, "IBM believes in censorship and bait and switch. It's un-American to buy an IBM PC."

Clearly this is an oversimplification of the situation, and Prodigy has its own side of the story. But don't lie awake at night awash in guilt. For years, IBM has portrayed the Mac as a wimp machine without software. Two can play at the Fear, Uncertainty, and Doubt game. Now it's our turn.

### Not Far Enough

Frankly, for our purposes, Prodigy may not have gone far enough. Maybe it should go further to inflict its vision of personal computing on its customers. Surely saying this will bring a rain of criticism upon me, but only good can come of it: Prodigy will decide to get even tougher and more draconian and antagonize more people, which is good for Macintosh. Or it will lighten up and tolerate more controversy on its service, which is also good for Macintosh.

If Prodigy decides to go the first route and get tougher, allow me to suggest some ways for it to achieve this goal:

 Screen and edit every message. I mean every message: public, private — even unsent ones. In fact, it would be good if Prodigy could read its customers' minds to see if they are thinking about sending a controversial message. There must be a way to do this through a new kind of keyboard membrane. IBM always seems to excel at keyboards.

2. Administer personality tests to prospective customers. Prodigy should prevent problems before they happen, so before people can join, they should have to complete a test, get it notarized, and send it to Prodigy. They should be accepted only if they pass Prodigy's requirements. Joining Prodigy should be as difficult as joining MENSA — and as useful. (Oh no, here comes more hate mail. This time from MENSA members who own guns and just escaped from Singapore.)

### SMARTBUNDLE!



### FOUR AWARD-WINNING APPLICATIONS IN ONE EASY-TO-USE BUNDLE!



The SmartBundle is a collection of four *easy-to-use*, award-winning applications bundled together *at an incredible price*—the best value in Mac software today!

And because *each* application has won a *MacUser Magazine* Eddy Award recognizing it as the 'best' in its field, you know each part of the SmartBundle is *extraordinarily capable*—a claim other starting Macintosh® packages simply can't make.

The SmartBundle: Easy, powerful, and affordable... the *smart choice* in software for new Macintosh buyers!

QUICK COMPARISON	Word Processing*	Database Management*	Spreadsheet & Charting*	Painting & Drawing	Retail Price
SMARTBUNDLE	• 135,000-word dict. • 1,4 million-word thesaurus • Footnotes	32,000 characters per field     Range checking	524,288 cells***     2,048 sort levels     44 display formats     Passwords     Variable row heights	Paint and Draw     Autotracing     Bezier control     Rotate/Distort     Stant/Perspective     Special effects tools	\$349 Suggested Retail (An \$812.95
	Spell check test:* 6.7 sec.				Value!)
MICROSOFT®WORKS 2.0	- 60,000-word dict.	6,000 records only     250 characters     per field only	22,500 cells     3 sort levels     17 display formats	No painting	\$295 Suggested
	Spell check test:* 5 min. 3.6 sec.				Retail

T/Maker Company • 1390 Villa Street, Mtn. View, CA 94041 • (415) 962-0195 • FAX (415) 962-0201

Based on a Macintosh Pius with a 20 megabye hard disk. Tests performed with a 24-page document. Full repagination performed. "Actual numined only by available disk space." "West advanced vinand memory design. C 1950 Tildsker Company. All rights reserved. The following are registered and unregistered trademarks for the companies issed: Write-Now, Tildsker, and SmartBundle are a trademarks of Tildsker Company. Askerinsh, Max. Apple Companer. Inc., Stirrowth, Microstot, Cargonian, Full impace, Ashmon-Take Componing, Reconcilidately as Software and Cargonian a

T/Maker.

#### Please circle 87 on reader service card.

### **GUY KAWASAKI**

- 3. Detect if a person who accesses Prodigy with a Mac works for a company that has standardized on the IBM PC. On detection, Prodigy could furnish lists of offenders to the Mac users' bosses. Corporate America would surely appreciate Prodigy's efforts to ensure that its employees use only IBM PCs.
- 4. Make Prodigy run s-l-o-w-l-y on Macs. This perpetuates the belief that Macs are slow compared with IBM PCs. It will also drive away Mac owners and keep Prodigy pure safe from the anarchists that we Macintosh owners are. (I hear that this recommendation has already been implemented.)

#### What You Can Do

So far I've focused on how Prodigy can drive customers away from its service and IBM. You can have a hand in this guerrilla operation too. Here's what you can do to help the Macintosh cause:

- 1. Join Prodigy if you're not already a member. (I never said that helping the Mac cause would be without sacrifice.)
- 2. Send mail to the Prodigy system operators complaining that your children have read obscene, distasteful, and inappropriate messages on the service.
- 3. Send mail to the Prodigy system operators threatening to boycott the Prodigy advertisers' products because they are implicitly supporting immoral electronic communication. (This is the nerd version of the boycott of advertisers on the "Married with Children" television show.)
  - 4. Cancel your membership.

I think this would drive Prodigy nuts, It would crack down even harder on dissidents. This would then antagonize more people. It would make Macintosh more attractive. It might even make Apple more attractive.

### But Seriously, Folks . . .

Seriously, I hope that Prodigy lightens up and takes a more hands-off attitude. It's just not a cool way to run this type of service. Don't tell me Prodigy is an advertising medium. Prodigy is a public bulletin board like CompuServe and America Online. It walks like a duck, it looks like a duck, it sounds like a duck. It is a duck.

Really, more than anyone, I want more people to buy Macs and not IBM PCs, but I don't want people to do so because Prodigy (and therefore IBM) is so backward. See, when you're on the winning team, you must play with a certain amount of grace. Not to mention modesty.

## Borrow,



### Introducing the PostScript-compatible LaserScript LX.

Forget about having to beg or borrow a printer, because at \$1,995 the LaserScript LX is a steal. It's up to 60% faster than a LaserWriter II NTX, with some features the NTX doesn't have. Like four active ports, so you can connect both Macs and PCs to the same printer—with or without a network. And automatic emulation switching, so you can switch between PCL4 and PostScript-compatible languages without using the front panel.

But the most attractive feature of the LaserScript LX is that all this performance won't break the bank—which is important in these economic times. For the dealer nearest you, call Abaton toll-free at (800) 444-5321 or (415) 683-2226. At \$1,995, it would be a crime to spend any more.

### LaserScript LX

PostScript & PCL 4 emulation 2.5MB standard RAM Auto-emulation switching 35 resident fonts

All ports active 25 MHz processor

\$1,995.00\*

#### LaserWriter II NTX

PostScript & PCL 4 emulation 2MB standard RAM Manual emulation switching 35 resident fonts

1 LocalTalk, 2 RS-232, 1 Centronics port 1 LocalTalk, 1 RS-232, 1 ADB, 1 SCSI port Only one port active at a time

16 MHz processor



\*Suggested retail price. LaserScript, LaserScript LX, Abaton, the Abaton logo, and "We make your ideas easier to publish." are trademarks of Everex Systems, Inc. Other brand names and product names are trademarks or registered trademarks of their respective companies.



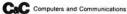
### No one can design a better multi-media presentation than you.

Introducing the PC-VCR from NEC. It doesn't take millions to produce a professional-looking presentation. You don't even need a Hollywood contract. All you need is the PC-VCR from NEC, a Macintosh computer with HyperCard 2.0 and the appropriate software. And you can write, design, produce and edit quality presentations right at your desk. The PC-VCR combines the power of video with your personal computer.\* Letting you create multimedia presentations that are both exciting and easy to understand. Designing a business presentation with the



PC-VCR will save you time and money, too. With NEC's unique software,\*\* you can achieve frame accurate indexing and seamless cut edits on VHS and Super VHS through simple mouse commands. It's quick, easy and you no longer have the expense of outside editing houses or video disc mastering. Best of all, the PC-VCR gives you full-motion capability, and allows you to combine that motion with other computer graphics. In other words, the PC-VCR is your chance to write, direct and star in your own production. Doesn't that sound like fun? For more information or location of your nearest dealer, call 1-800-562-5200, ext. NEC. In Canada, call (416) 795-3500.

<sup>\*</sup> PC-VCR compatible with any Macintosh or IBM (and 100% compatibles) computer system with one megabyte of memory, 640K of base DOS memory, plus 384K extended, not expanded, memory. \*\* Sold separately.







Outward rebound: Until now, Outbound Systems' laptop computers have required user-supplied Mac ROMs. No more. Outbound [(303) 786-92001 now offers a plug-and-play solution that includes Mac 512Ke ROMs. The trick is that Outbound sells you a 512Ke. installs the ROMs in its machine, and then buys the ROM-less Mac back from you for \$100. You never see the 512Ke. Outbound is also cutting the prices of its laptops by \$300 to \$600.

By Russell Ito

The 68040's year: Now that the low-end Macs are out, attention is turning to acceleration, specifically 68040 acceleration. Motorola's 68040 packs more than 1.2 million transistors — four times as many as on the 68030 — and consolidates on a single chip a math coprocessor, paged-memory-management unit, and data and instruction caches that are 16 times larger than those on the 68030. As a result,



the 68040 is nearly twice as fast as a IIfx (15 MIPS versus 8) and 12 times as fast in simple floating-point calculations (3.6 MFLOPS versus 0.3). Four manufacturers have jumped on 68040 acceleration

early. Radius' Rocket will be the first shipping unit. A NuBus card, it has a unique design that lets the 68040 take over the CPU functions, leaving the Mac CPU (68020/030) to handle all the I/O. The Rocket uses standard SIMMs and can be configured with 1 to 128 megabytes. Radius' software takes advantage of NuBus block transfer, so the Rocket can pass data across the NuBus at rates up to ten times faster than those of most other NuBus cards. Plus the Rocket has its own PDS (processor-direct slot), so fast daughterboards can be added. Radius has even included QuickDraw and display-list acceleration, in software, so the Rocket takes care of graphics acceleration too. The Rocket is expected to list for less than \$4,000. (408) 434-1010. It is NuBus card, the Performance/040 Accelerator, is similar to the Rocket. It also leaves the Mac motherboard active

to handle I/O functions and uses standard SIMMs. Second-quarter release. \$3,995. (404) 781-8643. Fusion Data Systems goes the PDS route, letting the 68040 take over the Mac completely. The TokaMac LC is a PDS card for the Mac LC that uses the Mac motherboard's RAM while



boosting the LC's performance beyond that of the IIfx. Second-quarter release. \$2,995. (619) 481-8427 or Charles Allen (619) 457-0781. Total Systems Integration's Magellan 040 is also a PDS card, only this time for the SE/30 and IIsi. It too uses the motherboard RAM. \$2,995. (800) 874-2288.

### Up to Date . . .

Studio/8, Electronic Arts' 8-bit-color painting package, has just had its first major upgrade. Version 2.0, which has been revised for the Mac IIsi and LC, now supports the Pantone Matching System and additional file formats. \$295. (415) 571-7171. Electronic Arts has also dropped the price of Studio/1, its black-and-white painting package, to \$79. Inspiration, Ceres Software's "thought processor," is now in version 3.0. The latest edition boasts color and improved graphics. \$249. (503) 245-9011.

### NEW ON THE MENU NEWS



The QMS-PS 2000 is a fast (20 ppm), big (up to 11 x 17 inches), 300-dpi, black-and-white printer that's ideal for mixed networked environments.

### QMS' Fast Departmental Printer

The speed of PostScript printers has been increasing nearly as fast as the price has been coming down. The Kodak Ektaplus 7016, which we described here last month, points the way to output integration, and the QMS-PS 2000 takes pure laser printing to new performance levels.

The QMS-PS 2000 is a 300-dpi, 20-ppm (pages per minute), Mips R3000 RISC-based PostScript unit that can handle paper sizes of up to 11 x 17 inches. Designed for networked environments, it includes the type of live emulation switching first seen in the QMS-PS 410, automatically switching among PostScript, HPPCL, HP-GL, and other optional emulations.

Built with a modular design, the PS 2000 comes with 4 megabytes of RAM on the motherboard that can be expanded up to 16 megabytes. You can add internal hard-disk drives of 40 or 120 megabytes, and an external SCSI port lets you daisy-chain up to six additional drives for even more storage. Other options include a 1,000-sheet feeder and a duplexer.

A year ago, this kind of power and speed would have cost you well over \$20,000, but prices have dropped, and QMS' list price for the base model is a little less than \$16,000.

QMS, Inc., One Magnum Pass, Mobile, AL 36618; (800) 523-2696. \$15,995 (base configuration, pricing of options not set at press time).

### QuickMail Keeps Pace

Following close on the heels of Microsoft's announcement of Mail 3.0, CE Software has announced QuickMail 2.5. Although it's not a complete rewrite, it does pack enough enhancements to make it worthwhile.

For mixed networks, QuickMail 2.5 offers several significant improvements. PC users running PC AppleTalk and the QuickMail Client software can now talk directly to the QuickMail Mac server. For users in environments running AFP-compatible PC network software, such as NetWare, Banyan, 3Com, and LAN Manager, no AppleTalk card is required. The PC QuickMail Client software can send messages to the PC file server that the Mac QuickMail server can retrieve for distribution to the Mac clients. The QuickMail server's polling is automatic, and the mail supervisor can set the polling frequency.

For Mac users — and especially their mail administrators — one of QuickMail 2.5's biggest enhancements is the change to a single-copy architecture. Now, instead of replicating the same message — and its enclosures — ten times for ten different recipients, the server stores only one copy of each and sends notifications to the recipients, which saves space on the server. Version 2.5 also boasts improved timing options and support for Apple's Com Toolbox.

QuickMail Remote users who've found a conventional terminal-emulation program more convenient than QuickMail Remote will be glad to know that Remote now has an interface that looks and functions just like that of regular QuickMail.

Finally, QuickMail users will see several small but important improvements. Forwarding messages is now much clearer than it was before (losing your job is less of a possibility, now that you can tell

where the message is really going), and address books can be accessed through a pop-up menu.

Although QuickMail 2.5 still doesn't include automatic directory updating, as does Microsoft Mail, CE has included a utility that the network administrator can configure and distribute so users can update their systems just by running the installer.

In the future, CE will introduce a Windows 3.0 client, and it is expected to use its newly acquired Perfect Timing technology to bring out a network-scheduling and personal-calendar system integrated with QuickMail.

CE Software, 1854 Fuller Road, P.O. Box 65580, West Des Moines, IA 50265; (515) 224-1995. Ten-user pack, \$599.95; five-user pack, \$399.95.

### Sony Means Multimedia

Sony has been expected to step to the forefront of multimedia for some time, and it's finally taken the first step. The Sony Vbox is an inexpensive computer/video-interface box that lets you control several Sony consumer-level video products from a computer.

The key to the Vbox is Sony's ViSCA (Video System Control Architecture) protocols, a set of Sony-developed commands for synchronized control of multiple video peripherals, including 8mm VCRs and camcorders. Apple has endorsed the ViSCA standard and is developing a ViSCA device driver and tool kit that it will distribute to developers for free. Both Farallon Computing and MacroMind have already announced plans to support ViSCA in their upcoming multimedia products.

By daisy-chaining seven Vboxes, users can control and switch among as many as seven Sony video devices from a single serial port on the Mac. Control can even include zooming the camcorder in and out

	60			Version: 2.5 User: Guest User MailCenter: CE_MA	LBOX
٥	Priority	Subject	Who	Date Sent	
i)o	Normal	Dave Reed	Rob MHS	10/11/90	9:44 AM 5
b	Normal	New Macintosh	Clark Clifton	10/11/90	9:28 AM
B.	Normal	Reservations	Albert Darwin	10/10/90	2:26 PM
ì.	Normal	Qt1 Remote	Scott Kiefer	10/10/90	2:26 PM
B.	Normal	Sales Stuff	John Helming	10/10/90	2:25 PM
3	QR OutBox				
3	Normal	October Orders	Jamie Kau	10/11/90	9:44 AM
3	Normal	LBJ Inc.	Dirk Clirk	10/11/90	9:28 AM
2	Normal	Training Video	Mark Snyder	10/10/90	2:26 PM
)	Normal	Car Rental	Lynne Sabo	10/10/90	2:26 PM
3	Normal	E. T. A.	Bradie Lynne	10/10/90	2:25 PM
				11112	35.55

QuickMail Remote users, rejoice! Among the improvements to QuickMail 2.5 is a QuickMail Remote that looks and acts like regular QuickMail.



The Vbox isn't as big as it appears here, but this inexpensive computer/video interface bodes well for Sony's future in multimedia.

from the Mac. By using an NTSC converter in conjunction with a Sony 8mm VCR, users can easily transfer presentations to tape and integrate live video into a presentation.

The Vbox doesn't bring frame-accurate video editing to the masses, but it does suggest that Sony may be the company to bring multimedia into everyday life.

Sony Corp. of America, Computer Peripheral Products Co., 655 River Oaks Parkway, San Jose, CA 95134; (408) 432-1444, \$249.95.

### Hard Disk Toolkit

A good hard-drive formatter is as essential a utility as a good data-recovery package. Until now, most users have had to struggle with Silverlining. Now there's an alternative. FWB's Hard Disk Toolkit equals or exceeds many of Silverlining's capabilities, but its interface is much easier to use.

Hard Disk Toolkit consists of five separate modules: a formatter, a microcode optimizer, a benchmarking utility, an INIT for removable media, and a diagnostic tool similar to SCSI Probe.

The package's formatter is the principal tool. A low-level SCSI formatter, Hard Disk Toolkit Formatter installs intelligent drivers that can optimize performance and, on Apple hard drives, actually increase storage capacity by 2 to 8 percent. The formatter also offers true partitioning, and you can resize partitions without destroying your data.

Although most of the other modules in the package will be of interest primarily to technicians or hard-disk junkies, they're all easy enough for most users to handle. Although reformatting your hard drive isn't something you're likely to do on a regular basis, formatting removable media, such as SyQuest cartridges, is a common occurrence and a formatter that's easy to live with is a blessing.

FWB, 2040 Polk Street, San Francisco, CA 94109; (415) 474-8055. \$199.95.

### **More Mice**

Third-party mice and trackballs are suddenly popping up all over.

Mouse Systems' A3 Mouse is a threebutton optical unit that is A/UX-compatible. The three buttons can be programmed, so macros can be assigned to the buttons and left-handed users can configure the mouse to suit.

EMAC's trackball, Silhouette, uses a sloped design so the user's hand and wrist are supported, with the ball itself held between the thumb and forefinger. Ergonomics are behind the unique design.

Spark International's Cordless Mouse and Trackball use an infrared signal instead of wires to get their messages through the ADB. For long-distance mousing, Spark says, the units can be used up to 15 feet from their receivers.

Mouse Systems Corp., 47505 Seabridge Drive, Fremont, CA 94538; (415) 656-1117, \$169.95.

EMAC, 48431 Milmont Drive, Fremont, CA 94538; (415) 683-2222. \$99.95.

Spark International, Inc., 1939 Waukegan Road, Suite 107, Glenview, IL 60025; (708) 998-6640. Mouse, \$160; trackball, \$170.



Many mice. Among the latest third-party offerings are Mouse Systems' A3 Mouse, a three-button A/UX-compatible unit; Spark International's Cordless Trackball (the company also offers the Cordless Mouse); and EMAC's Silhouette trackball.

### NewsLine

**Reports and Analysis** 

### Pixar Spins Off Software

PT. RICHMOND, CA — As its second round of programs was being released, Pixar announced that it would spin off a separate company to handle its software products. Pixar will continue to develop the RenderMan technology, but the development and support of applications using that technology will be the new company's responsibility. Development of and support for Pixar's current Mac software will also be the responsibility of the new entity. Under current plans, Pixar will not retain a financial interest in the new firm, which was unnamed at press time.

#### Claris CEO to GO

SANTA CLARA, CA — Catching the industry by surprise, Claris president and CEO Bill Campbell announced that he is leaving Claris to join GO as its president and CEO. Campbell's decision came only six months after Apple announced plans to retain control of Claris, and many industry observers believe that Campbell's decision was based on his desire to lead an independent company, which Claris had been scheduled to become. Campbell's management team will run Claris until a successor is chosen.

#### **Hayes Wins Patent Case**

SAN FRANCISCO, CA — The price of modems may be going up. Hayes Microcomputer Products has won a key patent-infringement suit against three manufacturers - Everex Systems, Omnitel, and VenTel - and as many as 300 other companies may ultimately have to pay royalty fees to Hayes. A federal jury found that the three companies deliberately violated a 1985 Haves patent for technology used to control a modem and awarded Hayes a combined fine of \$3.5 million. The verdict of willful infringement means that the fine can be tripled, should U.S. District Judge Samuel Conti so rule. Everex was fined \$1.61 million; Omnitel, \$885,000; and VenTel, \$1.01 million. An appeal is expected.

#### **Mediagenic Sells Out**

MENLO PARK, CA — Following a huge, \$19.7 million loss in 1990, Mediagenic has agreed to give up management control of the company to a Los Angeles-based investment firm, BHK Technologies. BHK acquired 25 percent of Mediagenic's stock in December.

### **PAGE LAYOUT**

### Ventura Publisher Macintosh Edition

### At last Ventura Software brings its venerable longdocument-publishing package from the PC to the Mac.

Ventura Publisher Macintosh Edition brings considerable muscle to the task of long-document publishing. But if you're an experienced Mac user, you'll have to make painful adjustments to the software's awkward, unconventional mode of operation. The program may be powerful, but its roots in the DOS world are evident: It doesn't look, feel, or drive like Mac software.

#### **Bilingual Ventura**

Ventura Publisher's chief strength is that it runs on Macs as well as on PCs. Consequently, it provides one of the best methods for exchanging DTP files in mixed Mac/PC publishing environments. If you don't need PC/Mac compatibility, your best choice for long and technical documentation may still be FrameMaker, Frame Technology's publishing package for Macintoshes and UNIX workstations (see review, November '90, page 54). FrameMaker makes good use of the familiar Mac interface while providing power and functionality equal to that of Ventura's package.

Ventura Publisher has been the long-document-publishing package of choice in the PC world for some time, running first under GEM/DOS and now under Windows. To its credit, Ventura Publisher Macintosh Edition brings exciting new features to the process of creating long and technical documents on the Mac. The Macintosh Edition supports an incredible variety of both PC and Mac word-processing and graphics file formats. It boasts an outstanding integrated Table Editor and a solid Equation Editor that resembles Microsoft Word's method of typesetting mathematical equations.

And like any long-document-publishing package worth its salt, the software features powerful tools for cross-referencing, variables, and TOC (table of contents) and index generation across multiple documents. Ventura Publisher also supplies

tools for creating and manipulating simple graphics and provides image-control features for halftones. Color support, however, is limited to spot color. You can anchor frames and rotate text and graphics, but Mac users will find the process awkward.

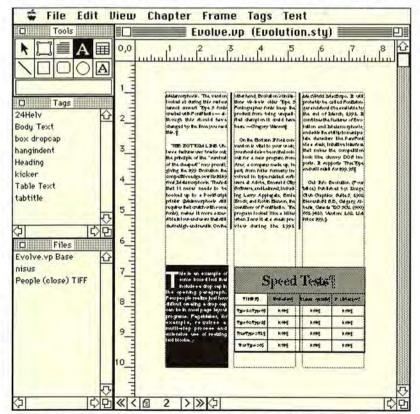
Installing Ventura Publisher requires a hard-disk drive with at least 4 megabytes of free space available. The program runs in 2 megabytes of RAM, but we found it unreliable with anything less than 3. Ventura Publisher loads all text into

memory when you open a document, so the more memory the better.

Like FrameMaker, Ventura Publisher uses a frame-based approach to page layout. When you launch the program, it opens to an untitled document (or chapter, in Ventura parlance). One annoying characteristic requires you to explicitly close any open file before you can open another — the program even dims the Open and New commands until the current file has been closed. PageMaker, another "serially monogamous" program, can at least close untitled files automatically when you open another file.

#### Font Management

The first time you use Ventura Publisher, the program scans your system and then creates and saves to disk a Font Width table containing character widths and kerning information for all your installed fonts. Most other Mac applications read this information from the screen fonts. Ventura Publisher reads it from the table it creates and uses the information to



Ventura Publisher Macintosh Edition brings long-document-publishing power from the PC to the Mac. The program will likely have the most appeal in mixed Mac and PC publishing environments, where Ventura Publisher versions for the PC running under Windows and GEM/DOS can exchange files with the new Mac version.

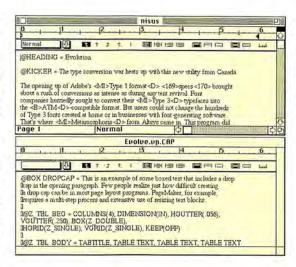
determine line breaks and character spacing. Although at first glance this approach may seem redundant, it actually has a benefit. If a file you're viewing contains fonts that are not installed in your system, Ventura Publisher selects similar substitutes from your installed fonts and determines the correct character spacing and line breaks by using the width table.

Ventura Publisher's unique approach to font management has some serious drawbacks, though. The program doesn't recognize more than 1,024 kerning pairs in any one font and may crash if it encounters more than that number. And because Ventura Publisher ignores kerning pairs beyond its limit as it builds the width table, it has kerning problems with many of the existing Adobe Originals, which have more than 1.024 kerning pairs. What's more, many more Adobe fonts with more kerning pairs than Ventura Publisher's limit are expected by the end of 1991. Although you can still use these fonts with Ventura Publisher, the elimination of some kerning pairs may have a marked impact on output quality.

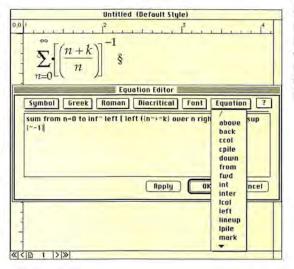
Creating chapters in Ventura Publisher involves several steps. The first will probably occur outside the program, because you will undoubtedly want to generate and edit your text with a separate word processor. That's because Ventura Publisher's editing powers are, to put it kindly, anemic. In all its incarnations, Ventura Publisher lacks even rudimentary search-andreplace capabilities — an astonishing shortcoming in a product designed for creating technical documentation.

Ventura Publisher's chapters don't actually contain the word-processing files you "import" and format. The program creates links, or pointers, to the external files. It then inserts its formatting codes into your original text. The codes become part of the text file, so if you have to go back and edit or spell-check the original file, you'll have an unpleasant surprise awaiting you. Even the text you create within Ventura Publisher, such as captions, is exported into external caption files, and all graphics are exported into external files too.

With this in mind, you might view Ventura Publisher as a very sophisticated front end to your word processor that provides preview, file-management, bookbuilding, and cross-referencing features. In light of its DOS origins, this may make sense in the context of Word Perfect 5.1 and Microsoft Word for the PC, which



Ventura Publisher writes typesetting code back to the original word-processing files, making it difficult for you to edit or spell-check them later.



Ventura Publisher
Macintosh Edition's
Equation Editor
works much like
Microsoft Word's
way of typesetting
mathematical formulas.

until recently were decidedly non-WYSIWYG. However, its validity in the Mac environment is questionable.

### **Unruly Files**

External text files are quite foreign to Mac DTP habits. Although some people may argue that it's better to have a myriad of smaller files than one giant, unwieldy typeset file such as that PageMaker creates, it's also quite apparent that a myriad of external files creates its own set of problems. For example, one 200-page manual we created in Ventura Publisher included a whopping total of 400 external graphic, text, and miscellaneous files. It's no wonder, then, that Ventura Publisher Macintosh Edition includes Manage Publication and Manage Files commands. You need them to tame your unruly herd of files.

Once your text is ready, you create a Ventura Publisher chapter by setting up page size, columns, and a style sheet that formats the text files. The style sheet contains tags that control the appearance of your paragraphs. Ventura Publisher offers considerable power over the printed word. Here its strength rivals and sometimes even surpasses that of QuarkXPress. Typographical features include automatic drop caps, automatic rules, automatic and manual pair kerning, tracking, and excellent command over vertical justification and spacing. Straddle elements in multicolumn formats are particularly well handled, and true running heads are possible (as they are in FrameMaker).

When you've placed your text on pages, you format paragraphs by selecting them with the tags tool and clicking on a tags name in the Tags window. Next, you can

select individual words within a paragraph and apply attributes such as italic or bold.

In addition to its dearth of Mac operating conventions, Ventura Publisher also exhibits some frustrating eccentricities. It has amazingly few keyboard shortcuts, and the menus are sparse. You have to select text before you can choose Bold, for example, which means you can't switch to bold, type a word in bold, and then revert to plain text. If you place the cursor at the beginning of a word that appears in bold or italies and then backspace, you don't delete a space; instead, you delete a hidden attribute code and the word loses its formatting. Even more exasperating, you can't undo this action. You have to use a special Copy and Paste command to ensure that you pick up the index or other special markers for selected text. Meanwhile, all these codes, although invisible in Ventura Publisher, are written back to the original word-processing files, where they form a kind of obstacle course for future editing.

#### The Bottom Line

For mixed environments that share files among Macs and PCs, you may want to add an additional mouse to the Ventura Publisher Macintosh Edition's three-mouse rating. But it's hard to imagine Ventura's package winning many converts among users who have cut their DTP teeth on the Mac. For them, FrameMaker presents a much more familiar face and offers long-document-publishing functionality on a par with Ventura Publisher's but in a far more stable package. And most definitely look elsewhere if you require graphics-intensive design. This is not Ventura Publisher's strength or promise.

- Gregory Wasson

[A maintenance release, version 3.0.1, which will address some of the shortcomings of the first release of Ventura Publisher Macintosh Edition, should be available by the time you read this. Ventura Software claims that printing speed will be three to five times as fast as with the current version. WordBridge, a utility that lets you import Word 4.0 style sheets into

Ventura Publisher Macintosh Edition, will be bundled with the product. In addition, version 3.0.1 will make the software compatible with the TOPS INIT, fix minor bugs, and improve on the documentation. A fix for the kerning-pairs problem is not planned for the immediate future. Ventura will send out version 3.0.1 free to all registered users. Add-on spelling and hyphenation dictionaries for 11 languages will be available. — Ed.]

### **Get Info**

### Ventura Publisher Macintosh Edition

Published by: Ventura Software, Inc., 15175 Innovation Drive, San Diego, CA 92128; (619) 673-6000.

Version: 3.0. List Price: \$795.

### **Multiplatform Publishing with Ventura Publisher**

Ventura Software claims that it has the perfect DTP solution for mixed Mac and PC publishing environments. With Ventura publishing packages that run under the Mac OS, Windows, and GEM/DOS, it would appear that the company's claim is substantiated. A closer look, however, reveals several flaws in the Ventura multiplatform publishing solution.

Ventura's support for a wide variety of word-processing and graphics file formats is unequaled. Together, its publishing packages support 30 in all. But MacUser tests showed that although the files created in any of the three Ventura versions are indeed transportable to any other version, the transfer process is anything but seamless. Add to that slight inconsistencies in the interfaces of the three products, and you've got aless-than-perfect solution. One source of confusion is that some of the same tools in the Mac and Windows versions have different names - the tags tool (Mac) is christened the paragraph tool in the Windows package, for instance.

Although Ventura Publisher files opened easily in our tests of file transfers between the GEM/DOS and Windows versions, these same files occasionally presented problems when sent to the Mac. The problem was not so much opening PC Ventura Publisher files on the Mac as it was coaxing the files error-free into the Mac Ventura Publisher environment. Problems included

clipped graphics, balking at PC Microsoft Word files, and changed hyphenation and line breaks in files generated by the GEM/DOS version.

In Ventura Publisher's favor, fonts never presented a problem in our file exchanges, because of the unique Font Width tables that accompany publications. We commend Ventura for engineering that lets Mac users open and view PC files that contain fonts not installed in their Mac system.

However, Mac-to-PC file transfers were more complicated, because the Windows and GEM versions of Ventura Publisher do not directly read the Macintosh Edition's files. You must first convert Mac word-processing and Ventura Publisher files to PC Ventura Publisher formats.

Inshort, although transferring PC Ventura Publisher files to the Mac and back was possible, the process can get time-consuming and complicated. We eventually found workarounds to every file-transfer problem we encountered, but the process is not as well engineered as FrameMaker's multiplatform (UNIX, NeXT, Mac) approach.

Ventura Publisher file transfers over networks are far easier than those involving floppies. But in all cases, Ventura Publisher's use of the Copy All command — which it requires in order to preserve links and pathnames between external graphics and text files and parent chapters — in place of the Mac Finder tremendously complicates the process.

Tables of Security

Ventura Publisher Windows Edition files don't always transfer to the Macintosh Edition without errors.



### With CompuServe, it's all at your fingertips.

When you become a member of CompuServe, you join a vital, active community of over 750,000 friends and neighbors from all over the world.

Small-town friendly. We keep in touch with electronic mail and faxes, and by posting messages on our bulletin boards. We even meet in forums to discuss everything from science fiction to sharing software, and to get invaluable personal computer software and hardware support. And that's one of the best things about small towns: people helping people.

Big-city opportunities. But we can also shop coast-to-coast at hundreds of nationally known stores, and take advantage of a world-class library. We have access to the latest national and international news. And our special financial files offer complete statistics on over 10,000 NYSE,

AMEX, and OTC securities.

We can even trade online with our local discount brokers.

And, just for fun . . . We've also got games — everything from trivia to TV-style game shows with

live entertainment to interactive space and fantasy adventures.

We've got airline schedules, so you can check out the bargains and book your own flights online. We even have listings from over 35,000 hotels.

It's not hard to get here. To get to CompuServe, all you need is a computer and a modem. We'll send you everything else, including a \$25.00 Usage Credit. In most places you'll be able to go online with a local phone call.

To buy a CompuServe Membership Kit, see your nearest computer dealer. To receive our informative brochure or to order direct, call today.

CompuServe<sup>®</sup> 800 848-8199

### **GRAPHICS AND DESIGN**

### **ColorStudio**

### Letraset's ColorStudio is a top-notch tool for high-end color-image processing.

For professional-level control over color and high-end output, not even Adobe Photoshop can top the new version of ColorStudio, an image-editing and painting package from Letraset. But be prepared to pay a price to exploit ColorStudio's talents fully. Although dollarwise the new \$995 ColorStudio costs a whopping \$1,000 less than the original version and costs only slightly more than the \$895 Photoshop, Letraset's program is decidedly more complex and difficult to use than Adobe's package.

### **Industrial Strength**

ColorStudio is an indispensable tool for users who work regularly with color images destined for high-end prepress systems such as Hell or Scitex, It's an industrial-strength package that requires a significant investment in hardware and memory. We recommend a Mac II-class machine with at least 8 megabytes of memory, a 32-bit display card, and a large-screen display.

You also need vast quantities of disk space to accommodate the virtual files that ColorStudio creates as you work. A good safety margin for virtual disk space is four times the size of the file you're editing (don't forget to allow for the original file and the saved-as modified version). ColorStudio's high-quality images create huge files — you can easily end up working in the 30-megabyte range. A SyQuest or Bernoulli drive comes in handy for storing large finished art files.

Users well versed in color theory will immediately appreciate the program's exceptional control over color balance. Once you've scanned an image directly into ColorStudio (Letraset supplies drivers for most popular scanners), you can correct shadows, midtones, and highlights in each color component of the image. When you're satisfied with the image, you can save your correction settings and apply them to future scans when you want an exact match between images.

ColorStudio's software-based monitor calibration lets you correct the way onscreen colors are displayed. You can choose to make settings permanent so that calibration operates systemwide for other applications as well. Modification of ColorStudio's Calibration file gives you just about the most accurate picture you can get without add-on hardware.

### **ABCs of Color**

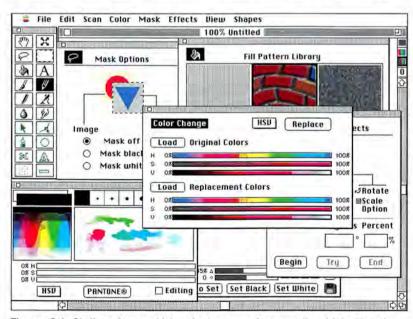
ColorStudio's handling of four-color separations is outstanding. After adjusting the RGB settings to an acceptable level, you can use the CMYK Color Correction dialog box to fine-tune the separations. You can save the CMYK adjustments you make and apply them to future work. You can preview all separations in color or black-and-white. Screen angles and frequencies are user-definable to four decimal places.

ColorStudio provides support for a large variety of proofing systems and film recorders. Letraset also plans to provide auto-correcting output filters for the DuPont 4Cast and Kodak XL 7700 dye-sublimation printers.

Although ColorStudio's tools may be more powerful than Adobe Photoshop's, they're not as easy to learn and use. Several steps are often required in ColorStudio to accomplish tasks that you can complete in one step with Photoshop — for example, converting a 24-bit-color file to 256 shades of gray is a simple menu choice in Photoshop, whereas ColorStudio requires a multistep, lengthy workaround.

The program provides a variety of powerful selection tools. The lasso operates in the standard fashion, as well as in Polygon, Oval, and Auto Selection mode. The Auto Selection mode lets you choose image areas on the basis of color, close hues, color range, and mask. You can refine all selections by additions and subtractions. Selected areas "float" over the main image so you can work on other areas or perform operations without losing the selection. Then when you're ready to drop the selected area onto the main image, ColorStudio lets you specify feathering values to facilitate anti-aliased, blended edges. You can save all selections as selection regions and then reselect them later, a function similar to Photoshop's Alpha Channel. ColorStudio's selection tools are powerful but complex - the kind that will appeal to professionals but that may frustrate casual users.

ColorStudio provides a powerful mask layer, which it stores as a separate grayscale image. This approach gives you fine control over the brightness, color, and saturation of masked areas. The density of



The new ColorStudio packs more high-end color-processing power than Adobe Photoshop but is harder to learn to use. The package's plethora of floating palettes provides excellent, on-the-fly control of color-image editing. But the complexity of these and other ColorStudio tools is likely to frustrate casual users.

black in the mask layer controls the degree to which masked areas are affected or protected. You can make masks by painting directly in the mask layer or by copying a portion of the original image into that layer.

#### **Custom Painting**

As a true-color painting program, ColorStudio again outshines Photoshop with its superior color control. With ColorStudio, you can vary paint opacity on the fly and in 10-percent increments, using numeric keys. Color palettes based on RGB, HSV, and CMYK are easy to set up and store. The palettes are especially useful for work, such as textile design, that requires many variations based on a limited selection of colors.

You can customize the program's painting tools to your heart's content, and you can change tool shapes and functions quickly and easily, using the program's floating palettes. The palettes remain onscreen for instant modifications until you choose to close them. However, you'll need a large display if you want to accommodate all of ColorStudio's palettes, because they take up a hefty share of screen real estate. Once you've modified a tool, ColorStudio lets you name and save the custom settings for future use.

The art of filling objects and areas with color is well implemented. Graduated fills can range from straight ramps to circles to arcs. There is even a triangular gradation that ramps among three colors, something that's very difficult to accomplish in Photoshop. You can combine fill areas to form any variety of shapes and ramps.

### **New Shapes Annex**

An optional add-in package for the latest version of ColorStudio gives you drawing as well as painting tools — something you don't get with Photoshop. The \$295 Shapes Annex drawing program installs directly into ColorStudio and provides a draw layer over the program's paint layer. You use Bezier control points and handles to manipulate drawings, just as you do with FreeHand and Illustrator. You can also import EPS line art from other PostScript-based packages.

Once you've moved your drawings into their final position over the paint layer, ColorStudio renders them into the paint image as perfectly anti-aliased lines and fills. You can also create custom tools with the drawing package that you can use in the paint layer for blurring, painting,



ColorStudio's Impressionist 2 filter and smear and blur tools were used to create this custom painting. The file began life as a 16-gray scan. Color was added with the Colorize feature of ColorStudio's paintbrush.

and editing. ColorStudio supplies a variety of special effects, including scaling, stretching, slanting, and rotating. You can also use its filters to create effects. Unfortunately, you're on your own when it comes to figuring out how to use them, because there's not much in the way of documentation about them. Experimentation yields the best results.

ColorStudio is a Rosetta stone of file formats. It can read and write just about any format, including non-Mac formats such as Targa, Scitex, and Crosfield.

#### **The Bottom Line**

Although ColorStudio may be beyond the scope of most casual users, professionals will appreciate the power and precision of its tools, particularly for sophisticated color-image processing. Once they've gotten beyond the initial confusion arising from the software's complex interface, ColorStudio will open up new vistas to savvy users.

- Doug Barnard

### Get Info

### **ColorStudio**

tttt1/2

Published by: Letraset, Inc., 40 Eisenhower Drive, Paramus, NJ 07653; (800) 343-8973.

Version: 1.11. List Price: \$995. **DATA ACQUISITION** 

### LabVIEW 2

### Eddy-award-winning LabVIEW 2 presents an elegant approach to scientific data analysis.

Most engineers, doctors, physicists, and chemists aren't programmers, yet many of them often need custom software. For these professionals, LabVIEW 2 is a boon, letting them create applications and software instruments quickly and easily in a clear, graphic environment.

Using LabVIEW 2 can actually be fun. It automates and integrates procedures for the acquisition, monitoring, analysis, and presentation of data as well as for the control of laboratory instruments. It interfaces to a variety of lab equipment and eliminates low-level programming of instruments. Not only is LabVIEW's code reusable but it's also easy to create a standard user interface for use with a variety of lab hardware. Version 2.1 adds some features and flexibility, fixes some minor bugs, and is a giant leap over version 1.0.

LabVIEW has put Macs into places where no Mac has gone before. NASA scientists use it to create high-temperature

superconductors in zero-gravity environments during high-altitude, parabolic flights, and other people use it for medical research, factory-machine control, chemical-process control, and education. Third-party hardware developers are even using LabVIEW and Macs as front ends to robotic-control systems, gas chromatographs, and image processing.

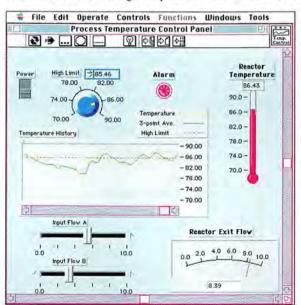
### Virtual Programming

LabVIEW is based on the concept of the VI (virtual instrument), a software file that looks and acts like a real laboratory instrument on-screen. Each LabVIEW file is a VI comprising two parts: the front panel and the block diagram.

The front panel is the interface to the VI. It can contain realistic-looking (and -acting) control items such as knobs. buttons, slides, and switches as well as output items such as graphs and strip charts. You can even build in audible alarms to warn you if a reading goes above or below set limits. These objects are intelligent - that is, a switch knows how to look and behave; how to label itself; and most importantly, how to pass information to and from the block diagram.

Engineers accustomed to sketching out a block diagram before programming a data-acquisition task will feel right at home with LabVIEW. Only in this case, the block diagram is the program, with graphical objects representing programming elements. You choose the functions from the hundreds of objects available on the menus. Connecting them with the

> nonprogramming professionals create virtual instruments quickly and easily. A typical LabVIEW front panel contains controls and indicators connected to lab instruments and measuring devices. To create the front panel, you select items from the Controls menu.



LabVIEW lets

wiring tool gives you a block diagram as well as a program.

The functions that block-diagram objects represent include such categories as digital-signal processing and filtering, numerical and statistical analysis, data input/output, and instrument control. However, the more complicated your VI, the more advanced your knowledge of LabVIEW needs to be. Some of the functions, such as those dealing with strings or arrays, are not obvious at first and will require some learning. Other objects act like little HyperCard stacks to take care of different cases or loops. I highly recommend going all the way through the lengthy tutorial. (National Instruments also offers a class for advanced users.)

One of the best things about LabVIEW is that you can use any VI as a part of another VI. This hierarchical aspect of the block diagram prevents you from reinventing the wheel and lets you use parts of VIs over again. For any VI you create, the Icon Editor lets you create a color or monochrome icon that appears in a menu as a subVI, for easy importing into other block diagrams. Double-clicking on a subVI icon in the block diagram brings up the block diagram for the subVI, which itself may contain other subVIs.

Your newly created subVIs aren't the only ones on the menus; LabVIEW comes with hundreds of VI files for you to use, copy sections from, or modify. The full installation, which comes on 14 floppy disks, consists of some 650 files occupying 19 megabytes of hard-disk space. (If you don't need absolutely everything under the sun, LabVIEW can get by with 3 megabytes of disk space.) The VIs that come with the program include drivers for 150 instruments (controls for IEEE-488 GPIB, RS-232/422, and VXI bus instruments) and analysis functions such as complex operations, curve fitting, matrix and vector algebra, and signal generation for simulations.

### **Facing the Interface**

LabVIEW's interface is so elegant, so filled with innovative labor-saving devices that I wish National Instruments also sold drawing and page-layout software. For instance, LabVIEW has a Tool palette similar in size to the one in PageMaker. Tool palettes can be a pain if you frequently change between tools, but in LabVIEW, pressing the Tab key changes the cursor among the wiring, positioning,



### fter 20 Million Pages Of PostScript Color Output, The Last One Looks

**As Great As The First.** 



### QMS ColorScript Printers... Brilliant and Resilient

Since 1987, QMS ColorScript™ 100 printers have produced over 20 Million hard copies and transparencies around the world! And because this color technology is engineered to use new ink with each print, the last page literally looks as bright and true as the first. This reliable QMS® technology has been united with the industry standards of Adobe® PostScript® and PANTONE®\* Color to put exciting, persuasive color at your fingertips page after page.

### Presenting The ColorScript Model 10 Printer

If it's dynamic presentations you're after, you need the Model 10. From business presentations to training programs, the Model 10 delivers vibrant, visually exciting colors that help you communicate ideas clearly. QMS screen angling technology and special presentation inks make these unusually captivating colors possible. And it's a proven fact that color presentations increase audience information retention and raise a

### The ColorScript Model 30i Printer, Strictly For The Image Conscious

Extremely low cost Pantone-approved proofs in about 60 seconds. If you're a graphic designer, commercial artist or publisher it's easy to see how the Model 30*i* is revolutionizing your business. The QMS ColorScript 100 Model 30*i* is changing the relationship between speed, quality and cost by allowing you to do your job faster, cheaper and better!

The Model 30*i* is the first true "what-you-see-is-what-you-get" color printer. The colors you see on a Pantone-approved monitor are the same colors you'll see on a Model 30*i* proof *and* the same colors you'll see on the finished, printed piece. And the standard 11" x 17"/A3 paper handling capacity allows you to design actual size 8 1/2" x 11" full bleed proofs with crop marks.

### True Adobe PostScript Guarantees Compatibility

Since Adobe introduced the PostScript page description language in 1984, it's become the industry standard for electronic printing and publishing. And

Please circle 83 on reader service card.

### Features That Will Color Your Perception Of Business And Design Forever

- Compatible with Macintosh computers, IBM PC's and clones and other popular systems
- 35 resident Adobe PostScript typefaces all scalable and rotatable
- Model 30i has standard 8 MB RAM/1 MB ROM
- Model 10 has standard 5 MB RAM expandable to 8 MB RAM
- Model 10 prints letter- and legal-size paper and transparencies
- Model 30i prints letter-size and 11" x 17" paper and transparencies
- AppleTalk®/RS-422, RS-232 serial and Centronics® parallel interfaces provide compatibility with most micro, mini, mainframe and workstation hosts
- External SCSI interface supports up to seven additional hard drives of unlimited size
- •68020 MPU-based controller plus exclusive QMS ASAP™ technology means fast first-page-out performance
- Prints high-quality Adobe PostScript text and graphics at 300 x 300 dots per inch
- HP-GL® emulation software included

with the QMS ColorScript 100 Model 10 and Model 30*i*, you get guaranteed compatibility and consistency. PostScript imitations, on the other hand, may not be 100 percent compatible with Adobe's PostScript.

### Two Top Performers Right Out Of The Box

Whether you choose the Model 10 or the Model 30*i* you can be up and running within minutes. Both printers are designed for maximum compatibility with Macintosh® computers, IBM® PC's and compatibles as well as many other systems. And, for additional support, QMS's technical and service professionals are standing by to assist you with answers that will get you up to speed fast. Call us today and we'll help you decide which printer best suits your needs. Or FAX QMS Product Information at (205) 633-4866.

### 1-800-523-2696 EXT. 23



PANTONE® is Pantone, Inc.'s check-standard trademark for color reproduction and color reproduction materials.

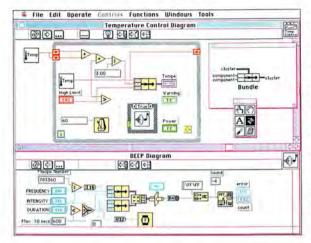
PANTONE Colors generated by CMS PostScript printers are four-color simulations and may not match PANTONE-delorlifled solid color standards. Use current PANTONE Color Reference Manual for accurate color. The following are trademarks or registered trademarks of their respective companies: QMS, QMS ColorScript, ASAP, and the QMS logo of QMS, Inc. Adobe and PostScript of Adobe Systems, Inc. IBM of International Business Machines Corp. Apple Talk and Macinicsh of Apple Computer, Inc. HP-GL of Hewlett-Packard Company. Centronics of Centronics Data Computer Corp.

### NEW ON THE MENU

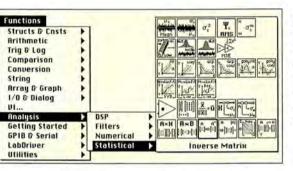
String

utilities

U1.. Analysis



To create a LabVIEW block diagram, you use the wiring tool (highlighted on the Tool palette at right) to connect the programming objects. The Help window (upper right) identifies an object and its connection points. Some of the objects in this block diagram are subVIs, which are complete LabVIEW files incorporated into other files.



LabVIEW's Functions menu gives you a wide range of processes to choose from. On the last part of the hierarchical menu, the name of the selected icon is shown at the bottom.

operating, and labeling tools, so you don't have to waste time constantly dragging the cursor between your work and the palette.

LabVIEW also features smart pop-up menus. Just Command-click with the mouse cursor on any object in the front panel or block diagram, and the pop-up menu designed to modify that type of object appears. Both pull-down and popup menus expand into hierarchical menus and are well implemented. For instance, the Controls menu contains a field of icons, but the icon's name appears at the bottom of the menu when you highlight one of the icons. This naming convention is much easier to use than dealing with the vast field of icons you sometimes see in drawing programs. Users of older LabVIEW versions will be happy to learn that now almost any object (including wires) can be moved and resized.

The Front Panel window has an innovative feature that would be a boon to graphing programs. To set the numerical range of a graph or a control, just type in the upper and lower limits directly on the chart or control — the intermediate values are automatically calculated and displayed.

For running a VI, both the Front Panel and Block Diagram windows contain a button that runs through the VI once and another that runs it continuously. A big improvement over version 1.0 is that VIs are now compiled, which greatly improves their speed. New to version 2.1 is an option in the Save a Copy As command that lets you save a VI without the block diagram, so that users can't muck around with your design. There's a run-time version for those who don't want to supply each user with a \$2,000 copy of LabVIEW.

### Trouble-free Troubleshooting

When a VI isn't working properly, LabVIEW's built-in troubleshooting features can be great time-savers, particularly for very complex VIs that contain many levels of subVIs. For instance, if the wiring is illogical or there are open connections, the Run button will display a broken arrow. Clicking on it gives you a window telling you what's wrong, and another button finds and highlights the problem on the block diagram.

A light-bulb button (called Highlight Execution) highlights the path of logic through the diagram as you run the VI. You can open subVIs incorporated into your block diagram while one of the higher-level VIs is running. If the light

bulb is on in the subVIs, you can watch the logic path in the subVIs as well.

If you think you may have connected some of the objects incorrectly, choose Show Help Window from the Windows menu. A Help windoid (a nonmodal window, in Apple's terminology) pops up, and it changes as you move the wiring tool over different objects in the block diagram. The Help windoid describes the various connection points of the object under the wiring tool.

LabVIEW adds a third button to the standard Save and Cancel buttons for saving changes when you close or quit. LabVIEW's Explain Changes button gives a detailed list of changes in plain English. This turns out to be a very handy feature with highly hierarchical file structures.

Of course, you may still be forced to resort to using the documentation, in which case you're in luck, because it is well written.

#### The Bottom Line

LabVIEW packs a rich data-gathering environment into a simple, elegant interface. It is also rock solid. I tested LabVIEW on a IIci, where it ran snappily, without a single crash or conflict. LabVIEW can continue monitoring and controlling in the background under MultiFinder.

LabVIEW is not cheap in price or memory. It requires 3.5 megabytes of RAM but runs on any Mac. To see if LabVIEW is right for your situation, I recommend getting the free demo package from National Instruments. The demo is a crippled, black-and-white version with a tutorial that gives you an idea of how it works (National was in the process of updating the demo at the time of this writing). If you can justify the cost, LabVIEW can save you a lot of time and effort.

John Rizzo

### LabVIEW 2

\*\*\*\*

Published by: National Instruments, 6504 Bridge Point Parkway, Austin, TX 78730; (800) 433-3488 or (512) 794-0100.

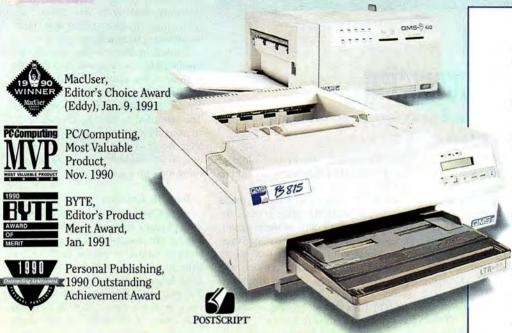
Version: 2.1.

version, \$495.

List Price: \$1,995; run-time



### ur Latest PostScript Printer Technology Impressed The Experts...



## ...So We Decided To Give Them More Of A Good Thing.

Before we developed the QMS-PS® 410 four page-per-minute laser printer, we performed one very important task. We listened to what you wanted. Then we engineered a printer light years ahead of the rest with features that aren't available on other printers at any price.

And now, QMS brings you more of a good thing. The QMS-PS 815 and 825. Two eight page-per-minute laser printers with all the leading edge features of the 410 plus enhanced processing speed, an increased duty cycle and an easy-to-read, multilingual front panel that lets you quickly configure the printer to suit your specific needs.

### **Award-Winning Simplicity**

How did these printers capture the imagination of an entire industry? The answer is, quite literally, simple! These leading edge printers are so simple to operate they seem to "think for you." Each printer features ESP" (Emulation Sensing Processor) which allows them to interpret incoming data and automatically choose the appropriate printer language without changing switch settings or sending complicated software commands.

And to make things still simpler, the 410, 815

and 825 can receive data simultaneously to LocalTalk®, RS-232C serial and Centronics® parallel interfaces, which makes them the best on the market for mixed computer environments. All this and more is the result of QMS's exclusive ASAP™ III technology (Third Generation Advanced System Architecture for PostScript). And it's this proprietary QMS® technology that wins awards and customers.

### True Adobe PostScript Plus HP Emulations

Whether you choose the 410, 815 or 825, you'll enjoy the desktop design flexibility of the latest version of Adobe® PostScript®. This most recent version includes the output enhancement of Adobe Type Manager™ (ATM). All printers come standard with 45 resident typefaces scalable from 4 points upward and fully rotatable. These PostScript printers guarantee compatibility with thousands of useful PostScript applications currently on the market.

For even greater flexibility, these printers feature standard HP® LaserJet® Series II emulation to support non-PostScript printing applications. And a variety of options makes the printers easily expandable. HP-GL®

### QMS-PS 410, 815 & 825 PostScript Laser Printers

- ESP Emulation Sensing Processor (printer interprets incoming printer language and switches automatically)
- SIO-Simultaneous Interface Operation (allows the printer to receive data from three interfaces simultaneously)
- LocalTalk, RS-232C serial and Centronics parallel interfaces (connects to IBM® PC's, Apple® Macintosh® computers and most mini computers and mainframes)
- 45 resident Adobe PostScript typefaces (all can be scaled from 4 points upward, rotatable, all with multilingual character sets)
- Front Panel Display on QMS-PS 815 & 825 (16-digit multilingual LCD array conveys printer status, allows user to quickly configure printer)
- Resident HP LaserJet Series IIP & PostScript emulations (prints PostScript & HP applications, HP-GL emulation cards available)
- QMS ASAP III Technology and 68020 Microprocessor (exclusive technology means fast first-page-out performance)
- PS Executive Series<sup>™</sup> Utilities Software (to easily set printer parameters)

emulation cards, HP compatible font cards, memory upgrades and extended paper handling capabilities are all currently available.

### **Expert Service And Support**

As a recognized leader in PostScript printer technology, QMS maintains a commitment to customer satisfaction by providing free, responsive technical support. And to keep your QMS printer operating at its peak, QMS National Service offers a variety of service options. Call us today and see how QMS quite simply makes the best PostScript laser printers in the world. Or FAX QMS Product Information at (205) 633-4866.

1-800-523-2696 EXT. 21



The following are trademarks or registered trademarks of their respective companies: GMS, GMS-PS, ASAP, PS Executive Series and the GMS logo of CMS, Inc.; Adobe, PostScript, Adobe Type Manager and the PostScript logo of Adobe Systems, inc.; Apple, Maciniosh and Locaffalk of Apple Computer, Inc.; HP, LaserJet and HP-GL of Hewlett- Packard Company; Centronics of Centronics Data Computer Corp.; IBM of International Business Machines, Inc.; hater Lending.

### **BUSINESS ACCOUNTING**

### DacEasy Light Checkbook Accounting

### DacEasy's simple, checkbook-based accounting package is worth a look.

Intuit's Quicken created and popularized the market for checkbook-driven, small-business accounting packages. Quicken proved that running a small business with a checkbook-based ledger system was easy to do and highly functional: Users didn't have to worry about cumbersome double-entry-bookkeeping accounting, sophisticated posting routines, or adjustments. All they had to do was write a check.

Light Checkbook Accounting, from DacEasy, typifies the genre. This straightforward, easy-to-use checkbookdriven general-accounting system can find a home in almost any small business or work as a personal-finance package.

#### The Details

Light Checkbook Accounting has nine menus: File, Edit, Bank, Card, Invoice, Accounting, Report, Misc, and Setup. The various menu choices offer a logical way to enter the program but do require you to bounce around a little.

The Setup menu, which is the first menu you use, provides the setup screens for personalizing your copy of the program. You simply enter all the necessary nameand-address information as well as an optional password, forms choices, and other customization choices from this menu.

Light Checkbook Accounting comes with an easy-to-modify standard chart of accounts that can handle almost any business and can easily accommodate any slicing and dicing you might want to do for your personal finances. The program makes it easy to edit, add, or delete account information. Once you've established a balance in an account, Light Checkbook Accounting is smart enough to stop you from making any changes that

would affect the account data's integrity. However, sometimes this control becomes too restrictive, such as when starting balances need to be adjusted.

To write a check — the activity that triggers all Light Checkbook Accounting's actions — you use the Bank menu. The program can accommodate two types of checks: manual and computer-generated. The manual-entry facility is streamlined, so using it for record keeping does work. You should use the computer-generated option for multiple check writing or recurring disbursements.

#### **Banking Business**

Light Checkbook Accounting handles multiple bank accounts, which is a major feature for small-business users, sole proprietorships, or people with several bank accounts. When you tab to the Paid field, the program automatically brings up the Account Selection window, which lets you choose the account the payment will affect. If the right account is not already set up, the program lets you set it up on the fly. Multiple distributions can be accommodated easily, which makes Light Checkbook Accounting useful for compound payments or fairly sophisticated bookkeeping.

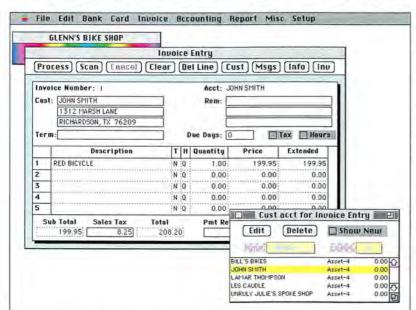
The program's Deposit/Withdrawal/ Adjustment feature provides a straightforward, useful format for entering noncheck-related banking activity. You can select multiple bank accounts, and the system keeps track of each entry with a separate transaction number that you can use later for reconciliations. Balances are dynamically updated and serve as a useful cross-referencing tool.

You can quickly view all of Light Checkbook Accounting's transactions in different ways. You can scan each transaction by using the Transaction window's Scan button, and after clicking on Scan, you can view your transactions on-screen. You can also select scans from the Misc menu.

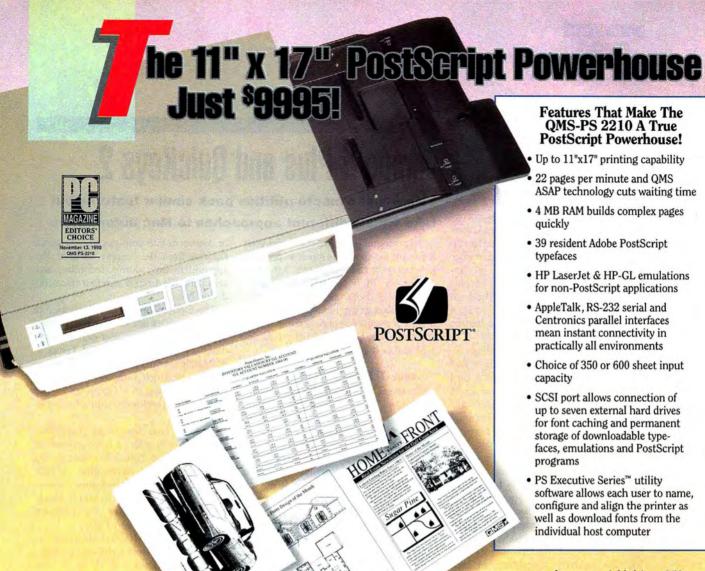
The Bank Register option activates the register screen, which is a virtual mirror image of a standard checkbook register. Transactions are again loaded for viewing, and the presentation is logical and clear.

Light Checkbook Accounting's unique feature is its accounting for credit-card purchases. The package keeps track of credit limits, credit available, current balance, and new charges.

You can distribute invoices to cash,



DacEasy Light Checkbook Accounting is a checkbook-based accounting package that would be at home in a small business or as a personal accounting system. Its invoicing is flexible enough that it could even be used as a point-of-sale system.



22 Pages Per Minute Give It The **Best Price-To-Performance** Ratio On The Market

It took QMS® to engineer a 22 pageper-minute PostScript® laser printer that stretches beyond the capabilities of other printers and still costs less! The QMS-PS® 2210 reaches beyond many others by giving you all popular paper sizes up to 11" x 17"/A3-size printing capability. And it surpasses others in print quality as well with laser-sharp fine line detail and rich saturated black fill areas. No more pale cut-and-paste newsletters, no more mismatched spread sheets, no more engineering and design projects held together with staples and tape! And the 2210 beats the competition price-wise, too, by delivering all this and more for just \$9995.

### Perfect For The "Upscale" Network

The QMS-PS 2210 is perfect for a shared printer environment requiring high-quality 11"x17" output. Whether you use Macintosh® computers,

IBM®PC's /compatibles or most other mini computers and mainframes, you'll enjoy instant connectivity with AppleTalk®, RS-232 serial and Centronics® parallel interfaces. Should you require non-PostScript printing applications, the 2210 comes standard



with HP-GL® and HP® LaserJet® emulations. The 2210 also cuts waiting time with fast page processing made possible by QMS's exclusive ASAP™ (Advanced System Architecture for PostScript) technology and a 68020 microprocessor. That means fast first-

Please circle 85 on reader service card.

### QMS-PS 2210 A True PostScript Powerhouse!

- Up to 11"x17" printing capability
- 22 pages per minute and OMS ASAP technology cuts waiting time
- 4 MB RAM builds complex pages quickly
- 39 resident Adobe PostScript typefaces
- · HP LaserJet & HP-GL emulations for non-PostScript applications
- · AppleTalk, RS-232 serial and Centronics parallel interfaces mean instant connectivity in practically all environments
- · Choice of 350 or 600 sheet input capacity
- · SCSI port allows connection of up to seven external hard drives for font caching and permanent storage of downloadable typefaces, emulations and PostScript programs
- PS Executive Series<sup>™</sup> utility software allows each user to name, configure and align the printer as well as download fonts from the individual host computer

page-out performance. Add this to 350 sheet input capacity (600 sheets in the QMS-PS 2220) plus a 20,000 page-permonth duty cycle, and it's easy to see why the QMS-PS 2210 is a true network star!

### **Expert Service And Support**

As a recognized leader in PostScript printer technology, QMS maintains a commitment to customer satisfaction by providing free, responsive technical support. And to keep your QMS printer operating at its peak, QMS National Service offers a variety of service options. Call us today and see how easy it is to put the true PostScript powerhouse to work for you. Or FAX QMS Product Information at (205) 633-4866.

1-800-523-2696 EXT. 22



Script of Adobe Systems, Inc. IBM of International Busil AppleTalk and Macintosh of Apple Computer, Inc. -GL of Hewlett-Packard Company. Centronics of Centro

### NEW ON THE MENU REVIEWS

sales, or tax accounts. Invoice entry in Light Checkbook Accounting handles multiple-line invoices, automatic salestax calculations, days due, advance payments, and payment referencing, and you can print invoices in an attractive, professional format.

You enter all non-check-related or non-credit-card-related accounting transactions through the Accounting menu. The format is a standard debit/credit entry that does not automatically update batch-entry totals. The program can also easily accommodate memo transactions. Each batch of entries can reference a journal code, a transaction number, or a reference number as well as a description.

Other features include budgeting, recording comments with transactions, and a powerful option for bank and credit-card reconciliation. You can also use Light Checkbook Accounting as a POS (point of sale) system: The program automatically stuffs invoices into the Print Invoices window, which you can then print.

The program has a simple inventory system that is nothing more than an electronic scratch pad. It is helpful for small inventories, but it's not integrally linked into the program itself, so business users shouldn't rely on it. Finally, Light Checkbook Accounting produces a wide variety of accounting reports, including journals, activity statements, balance sheets, income statements, actual expenses, revenue/expense budgets, variance reports, directories, and even mailing labels.

### The Bottom Line

DacEasy Light Checkbook Accounting is a well-done, functional small-business and personal accounting system. If you don't already own a checkbook-driven accounting system, this program is a solid contender for your dollars.

— Ken Landis

### **Get Info**

### DacEasy Light Checkbook Accounting

Published by: DacEasy, Inc., 17950 Preston Road, Suite 800, Dallas, Texas 75252; (214) 248-0205.

Version: 2.0. List Price: \$69.95.

### UTILITIES

### Tempo II Plus and QuicKeys 2

### Two revised macro utilities pack similar features but take widely different approaches to Mac automation.

Two programs designed to keep your hands off the mouse as much as possible have recently been upgraded: Affinity's Tempo II Plus and CE Software's QuicKeys 2. Both packages make easy work of assigning mouse-issued commands or a sequence of commands to any keystroke, but QuicKeys' integrated design makes it easier to live with.

#### Tempo II Plus

Tempo II Plus looks like software by committee. To take full advantage of the program, you have to install three INITs, two Fkeys, one DA, and a stand-alone application. This is in addition to macro files and any special-purpose extensions you may need. An installer application takes the drudgery out of setting all this up, but the amount of clutter can easily be disconcerting.

Once you've installed all the program's files, macros are simple to create. As with Apple's MacroMaker, Tempo II Plus uses a recording-scenario interface. Choose Start Recording from the Tempo menu, perform the tasks you wish to include, stop recording, give the macro a name and a key equivalent, decide whether you want the macro to be available in all programs (a universal macro) or in just a particular application, and click on OK.

To incorporate opening an application

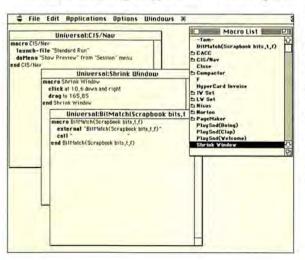
or document into your macro, you select Options from the Tempo menu at the appropriate time during recording and select the file from a standard open-file dialog box.

The Options menu item also lets you repeat a macro or branch to another macro, depending on certain user-defined conditions. This feature, along with Tempo's BitMatch external (explained below), is one area in which Tempo II Plus clearly has an advantage over QuicKeys — the ability to put conditional instructions into macros.

Another nice feature is Autopaste, which lets you select a large amount of text, a graphic, or both and create a macro key to place that information. A new enhancement also lets you direct sound recordings via the Resource Mover. Using any sound-input device, you can enter sounds directly into any file.

The new version lets you add macros to or remove them from a pull-down menu, using the package's Tempo+ Viewer application.

Tempo+ Externals is a collection of program patches that add functionality to macros. The new version adds 15 new externals to the 25 of the original package. Many of the 40 externals seem to address deficiencies in Tempo II Plus itself, such as checking to see if a program is running



Tempo II Plus is an expanded version of Affinity's powerful macro package.
Tempo+ Viewer is a stand-alone application included in the package that lets you read (but not edit) macro scripts and lets you add macros to or remove them from the Tempo+ menu.



## Some.

All.

Why settle for an incomplete set of utilities when you can have them all? Presenting MacTools® Deluxe—the most comprehensive, powerful collection ever assembled for the Macintosh.

It lets you find misplaced files, recover crashed disks, undelete trashed files, backup your data, optimize volumes, secure files and folders, quickly copy floppies, organize folders, and even partition your hard disk.

Not only do you get the broadest range of utilities available, but each function sets new standards for performance. For instance, let's say you want to undelete a trashed file. Using a selective search, MacTools locates likely candidates and lets you view their contents prior to recovery—so you don't waste time or retrieve unwanted files. No other utility even comes close.

So why settle for some, when you can have it all?

MacTools Deluxe...from the leading developer of Macintosh utilities since 1984.

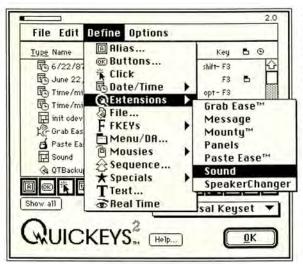
For a free brochure or the MacTools dealer nearest you, call 1-800-445-0412.

### **Data Recovery** File Undelete with View Minor File Repair Recover Files in Place Disk Analysis Hard Disk Backup Selective Backup and Restore Data Compression Multiple Setup Files File Locator DA **Hard Disk Partitioning** Automount w/Password Prompt **Hard Disk Optimization** Complete Disk Erase Visual Display of Fragmentation Secure/Encrypt File Desk Accessory **Fast Floppy Copying** Disk Editor

### Central Point Software INC

Making Computing Safer, Simpler, Faster.

### REVIEWS



QuicKeys 2 beats
Tempo II Plus in ease
of use and overall
design. Users can
assign any number of
commands —
including several new
extensions that come
with QuicKeys 2.0 —
to a single keystroke
via QuicKeys'
QuicKPanel.

under MultiFinder. Others, such as the aforementioned BitMatch, are ingenious. Used inconjunction with Tempo's Bitmaps Fkey, this jewel looks for a certain image in a defined area of the screen. If it finds it, the macro will branch to another macro; if it doesn't, it will branch to a second macro. Two other powerful externals, Box and Button, let you create custom dialog boxes to launch one or more macros. Again, these conditional-instruction features make Tempo a very attractive program.

What makes Tempo II Plus unattractive is the Rube Goldberg collection of programs needed to make everything work. The disk's About file includes a list of full or partial application incompatibilities that reads like a who's who of Macdom: QuarkXPress, Radius monitor cdevs, PageMaker 3.0 (4.0 works fine), Full-Write, Stufflt, and many popular INITs and cdevs. It is also incompatible with Apple's DeskTop Manager. In addition, there is an incompatibility on the IIci with CE Software's CE Toolbox cdev (under the Finder only), which is required for such utilities as DiskTop 4.0 and Alarming Events.

### QuicKeys 2

QuicKeys 1.2 was a rock-solid macro utility, but it had one glaring deficiency: Creating macros for a sequence of tasks was awkward at best. Happily, CE Software's QuicKeys 2 has eliminated that hassle. Unfortunately, the new product did not come out of the chute as rock solid as it used to be.

As with Tempo II Plus, you create sequence macros by using a recorder-type

interface that you access via the pop-out menu from CE's now ubiquitous CE Toolbox section on the DA menu, or you create them through a user-defined QuicKey. Also as with Tempo II Plus, you have the option of recording the macro on a sequence-by-sequence basis — recording only the specific action — or in real time — literally mirroring every cursor movement, drag, and click. Depending on the situation, one method may work better than the other, but the sequence method executes much more quickly.

As in previous versions, QuicKeys lets you create a macro for a single event through its QuickPanel window. These macros are classified as Alias (a new feature for assigning one keyboard character to another key), Buttons, Click, Date/Time, Extensions (new), File, FKEYs, Menu/DA, Mousies (line up, page down, and so on), Sequence, Specials, Text, and Real Time (new).

The QuicKeys package includes fewer extensions than does Tempo II Plus, partially because QuicKeys itself handles many of the tasks for which Tempo II Plus uses extensions. Some of the QuicKeys extensions include Grab Ease and Paste Ease (similar to Tempo's Autopaste), plus extensions to compress and decompress files using Aladdin Systems' StuffIt Deluxe, which is not included.

Once more, as with Tempo, you can assign QuicKeys macros to the QuicKeys pop-out menu in CE Toolbox. However, you can specify this action when creating or editing the macro without going to another program — a clear advantage overTempo. Also, you can use QuicKeys' Timer option to execute a macro at a

predefined time, on startup, or when you launch an application.

QuicKeys has several other advantages over Tempo — for example, editing sequence macros is much easier with QuicKeys than it is with Tempo. Another advantage is the package's design: Everything is contained in two cdevs — the QuicKeys cdev itself and the CE Toolbox — plus the individual macro files and extensions. As a result, QuicKeys is much easier to use, and it "feels" cleaner. You can also extend the functionality of QuicKeys macros by linking them to other CE Software products, such as QuickMail and Tiles.

On the minus side, QuicKeys 2 was released with several infuriating bugs — unusual for a CE Software product. Most of the problems involved using the Installer, the Timer option, and general operation under the Finder. However, an update (version 2.0.1) was released within 30 days of the initial release. This version seems to have corrected the vast majority of the problems, although many users are still mentioning some more-obscure bugs.

### The Bottom Line

Feature for feature, QuicKeys 2 is still the hands-down winner. Its integrated design makes it easier to install and use. The one advantage Tempo II Plus has over QuicKeys is conditional macros. If they're what you need, you'll have to go with Tempo II Plus and learn to live with its fragmented design.

- Tom Petaccia

### **Get Info**

### Tempo II Plus

111

Published by: Affinity Microsystems Ltd., 1050 Walnut Street, Suite 425, Boulder, CO 80302; (800) 367-6771.

Version: 1,2.4. List Price: \$169.95.

### QuicKeys 2

**Published by:** CE Software, P.O. Box 65580, West Des Moines, IA 50265; (515) 224-1995.

Version: 2.0.1. List Price: \$149. We Know Mac Modems...



**DataLink Modems from Applied Engineering** were designed specifically for the Macintosh from the ground up, not "ported over" from MS-DOS designs.

DataLink/Mac Portable™ (left) incorporates an ultra-low power design to extend the Mac Portable's battery life and includes Send-Fax and MNP-5 as standard features. DataLink/MacTM, our internal modem for the Mac II series, includes an extra serial port for another peripheral, and MNP-5 (optional). DataLink LCTM also includes an extra serial port as well as a Math coprocessor socket, and V.42bis option (giving you an effective transfer rate of up to 9600 baud and error free transfers). DataLink ExpressTM our Mac-platinum colored external modem for all Macs, has both mini-8 and DB-25 connectors and features 12 status lights including our exclusive "Line Engaged" indicator to show a shared line in use.

Packed with features like complete communications software, free online time with several online services including America Online, Prodigy, GEnie, NewsNet, Delphi, and the Official Airline Guide. All DataLink modems are FCC certified and fully Hayes AT compatible. Five-year warranty and free technical support from a company that's been

in the Apple peripheral business for more than 10 vears. And, best of all...

AE Send-Fax is available with whichever DataLink you choose.

Don't waste your time printing a hard copy and then waiting around the fax machine to see if your faxes get through. Go right back to what you are doing while Send-Fax does the calling for you in the background. Send-Fax can send an entire distribution list from your phonebook entries while you're at your computer or away.

Fax pages from different applications simultaneously from your Mac's screen as simply as printing. Create your own fax-number phonebook for instantaneous dialing and include a customized cover sheet to ad your own creative edge. Save money by telling DataLink to send your faxes late at night, when phone rates are lowest and you're least likely to encounter busy signals.

Open your Mac to the innovation of Applied Engineering and experience a DataLink modem for yourself!

Order today! To order or for more information, see your dealer or call (214) 241-6060 today,

Please circle 70 on reader service card.

9 am to 11 pm, 7 days. Or send check or money order to Applied Engineering, MasterCard, VISA and C.O.D. welcome.

DataLink/Mac Portable	\$299
DataLink/Mac (DL/M)	\$299
DL/M w/ MNP-5 or Send-Fax	\$349
DL/M w/ MNP-5 and Send-Fax	\$399
DataLink LC (DL/LC)	\$349
DL/LC w/V.42bis	\$379
DataLink Express (DL-X)	\$249
DL-X w/ MNP-5 and Send-Fax	\$349



The enhancement experts. A Division of AE Research Corporation

(214) 241-6060

P.O. Box 5100 Carrollton, TX 75011



©1991. AE Research, Inc. All rights reserved. Brand and product names are registered trademarks of their respective bolders.

### SECURITY

### A.M.E.

A.M.E. may be the most comprehensive — and potentially dangerous — security package ever.

You might not expect the maker of the game Crystal Quest to produce a serious security application. Casady & Greene's A.M.E. (Access Managed Environment) offers some of the most complete security options and features available for the Mac, but its unforgiving approach makes it suitable only for the brave at heart.

### Lock Down

A.M.E. can function on any Mac from the Mac Plus on up and requires a harddisk drive and System 6.0.2 or later. You must use the distribution floppy as a startup disk for installation.

Although A.M.E. makes modest demands in terms of hardware and memory, it does require some steady nerves and stable power during installation. The whole process takes from 15 to 30 minutes. The scary part is that any interruption, be it your cat walking across the keyboard or a power outage, will force you to reinitialize your hard-disk drive and restore your files and applications from backups. Don't install A.M.E. during a storm.

Installation places an INIT and a DA into your System Folder. The INIT seems amazingly compatible — one user I talked with uses A.M.E. with 45 other INITs on a regular basis and reported no problems with the system. I experienced no conflicts during testing.

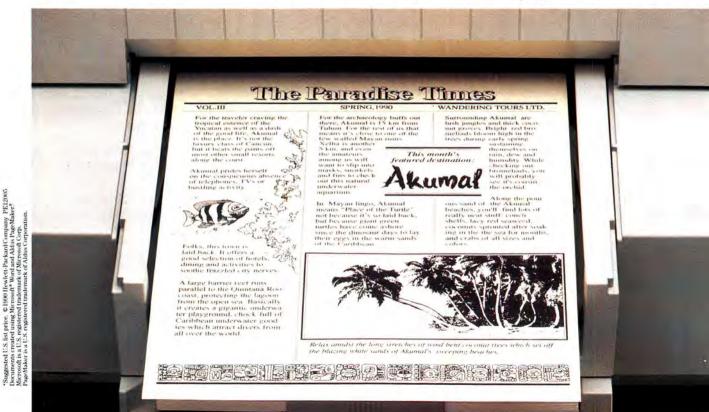
A.M.E. goes about its business in a variety of ways. It offers volume lock for your startup drive and any other SCSI hard drives you've protected during the initial setup, which means that no one can gain access to an A.M.E.-protected hard drive

by booting the Mac with another System disk.

An A.M.E.-secured Mac forces you to sign on when you start the computer. Initially, someone assigned as the administrator defines access levels and privileges through the A.M.E. DA. You can limit access to programs, folders, disks, and files according to user level. You can even group a selection of files, programs, and so on into an access set—this makes it easy to assign common passwords and protection levels consistently. You can limit access in many ways: read/write, copy restrictions, floppy-drive use, and so on, and you can even restrict access to specific DAs or printers.

The degree to which you can customize all aspects of user access on a user-by-user level is impressive. A good example is A.M.E.'s treatment of passwords. You can configure the environment so that passwords are case-sensitive or are of a certain length. That much is standard. But you can also set an option that forces people to change their passwords at regular

### With the HP DeskWriter, you can



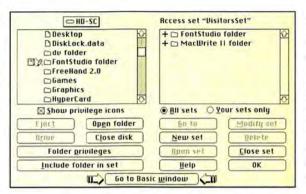
intervals. And you can set a control that locks out individuals trying to guess passwords, for increasingly longer periods of time.

A.M.E. can protect files as well as programs by requiring the use of passwords and/or key disks before a file can be opened or launched. You can also set encryption methods (fast or DES) to run automatically whenever you close a file or sign off as the current user.

### Law and Order

System administrators can keep tabs on all aspects of a protected system by using A.M.E.'s outstanding Activities Log. The log permits the monitoring of peripheral usage, file and program launches, and virtually any other event that might occur. You can export the log to databases, word processors, and spreadsheets, providing an easy way for compiling statistics that might be used for billing or tax purposes.

A.M.E. also features a built-in INIT manager, auto-sign-off, and complete file erase. Various aspects of the program act



A.M.E. is a complete
— and possibly risky
— security- and
access-management
package. You create
user levels and assign
privileges in a clear,
graphical way. Its
access sets provide an
easy way to assign
common passwords
and access privileges
to a group of files.

as virus checks (and it comes bundled with Virus RX).

On-line context-sensitive help is always ready for perplexed users — a good thing, because the manual is rather shoddy. It's unattractively designed, poorly proofed, and all too often confusing — cardinal sins in a program that's this complex and powerful.

A.M.E. adopts a hard-line approach to desktop security and is often unforgiving of software that you might use on a regular basis. You cannot use most disk optimizers on an A.M.E.-protected disk. And you cannot run installer programs that must be launched from a floppy. Specifically forbidden are Adobe Separator (you can request a special version of either A.M.E. or Separator to get around this prohibition), Disk Express II, INITPicker, MacLink Plus, TOPS 2.0, and a handful of others. If you have to use any of these programs, you must remove A.M.E. first, which takes as long as installing it.

### have it all. (But keep it to yourself.)



### The HP DeskWriter printer puts laser-quality printing right at your fingertips.

With a small size and a \$995\* price tag, the DeskWriter printer easily fits on your desk and in your budget. And its advanced 300 dpi inkjet technology lets you print sparkling text and detailed graphics.

The DeskWriter is also designed for easy use with your Macintosh, and has both serial and AppleTalk interfaces. It even includes scalable and outline fonts. Combine that with the DeskWriter's whisperquiet operation, and keeping it to yourself will be that much easier. So call 1-800-752-0900, Ext. 1004 for your authorized HP dealer.



	Successful	Failed
Signing on and off	$\boxtimes$	$\boxtimes$
Use of printers	$\boxtimes$	$\boxtimes$
Use of DAs	$\boxtimes$	$\boxtimes$
Insertion of disks	$\boxtimes$	$\boxtimes$
Initialisation of dis	ks 🗵	$\boxtimes$
Use of serial ports	$\boxtimes$	$\boxtimes$
Opening of files	$\boxtimes$	$\boxtimes$
File reads	$\boxtimes$	$\boxtimes$
File writes	$\boxtimes$	$\boxtimes$
Launching of progra	ams 🖂	$\boxtimes$
Other file operation	is 🖂	$\boxtimes$

A.M.E.'s Activities
Log provides detailed
information about
almost any activity on
your Mac, so network
administrators may
find it useful for
auditing computer
usage.

scary. Although competing products such as ASD's FileGuard and Magna's Empower may not offer the same degree of security as A.M.E., they offer enough functionality to satisfy all but the most demanding computer environment. A.M.E. may have a role for users who need this degree of high-end security (or who have been ordered to use it), but everyone else will want to steer clear. It's a security product that makes you feel insecure.

Gregory Wasson

### Get Info

### A.M.E.

\$\$1/2

**Published by:** Casady & Greene, P.O. Box 22920, Carmel, CA 93922; (408) 624-7865.

Version: 1.1.3.

List Price: \$279 (site rates

available).

### The Bottom Line

A.M.E.'s feature set is impressive, but its numerous incompatibilities make it unacceptable for most people. And its potential for locking you out of your hard drive is so great that the first edition of the manual I received even warned that data loss is highly likely if an A.M.E.-protected drive is used by inexperienced users! That's refreshingly honest — but still

It's no figment. It's pigments for

For a limited time only, you'll get a \$200 rebate when you buy a fully Macintosh-compatible HP PaintWriter color printer. Imagine that.

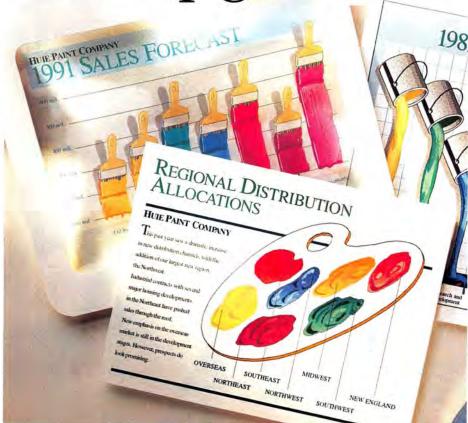
Now imagine having your output colors match your screen colors. Right down to the exact PANTONE\* number. Our new, enhanced software drivers and improved, brighter inks make sure of that. And, as always, you get high-quality output in millions of colors for paper or transparencies.

For shared use, check out the PaintWriter XL. It offers AppleTalk, faster speed, and auto-sheet feed.

But whatever you do, do it soon. This rebate offer expires May 31, 1991. So call us at 1-800-752-0900, Ext. 2113. We'll quickly send you the name of your authorized HP dealer and a piece of sample output.

You'll see that anything else is unimaginable.





### ORGANIZATIONAL TOOLS

### **Org Plus for Macintosh**

### If organization charts keep your business running smoothly, you need Org Plus.

Org Plus, published by Banner Blue, is a software package that does one thing — create organization charts — and it does this well. Organization charts are those collections of boxes connected by lines, with the name and position of an employee in each box. They're used to provide a visual representation of the company's structure — who reports to whom.

Banner Blue is no stranger to organization-chart software — it publishes the number-1-selling organization-chart program for DOS computers, but don't let that turn you off. Org Plus for Macintosh is a Mac program through and through. Banner Blue did things right. Many of its

dialog boxes are nonmodal (yea!) and include an Apply button, Undo is available for most actions, and the context-sensitive help is excellent. And, of course, you can exchange files with the DOS version.

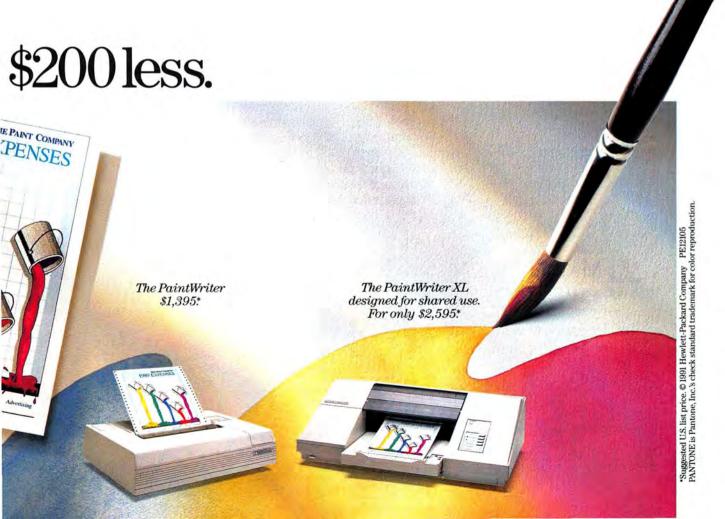
Before developing Org Plus, Banner Blue surveyed more than 2,000 organization-chart makers and discovered four important facts: The average organization chart contains 37 people, the average respondent maintains 16 charts of this size, the average chart is updated monthly, and respondents consider it their top priority to create compact charts that show as many positions as possible on a single page.

To be as useful as possible, a good organization-chart program should create and modify charts quickly and easily, offer flexible chart styles, automatically position and draw the boxes and connecting lines, resize boxes automatically, and make it easy to fit charts on one page. Banner Blue has created a program that does all these things simply and elegantly.

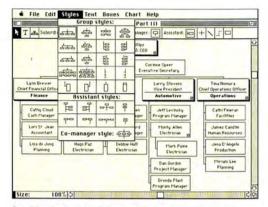
### **Building with Boxes**

The basic building block of Org Plus is the box. The first thing thing you do when you start a chart is create a Label Setup, which defines what goes in each box — name, title, department, and so on. Don't worry if you don't get something right the first time, because you can change it later for the whole chart or selected boxes.

Once you've defined your Label Setup, your new page appears with a single box. All the boxes you create are subordinate to this topmost box, and you can create subordinate boxes to your heart's content. You can fill in the information as you create a box or create many boxes and type



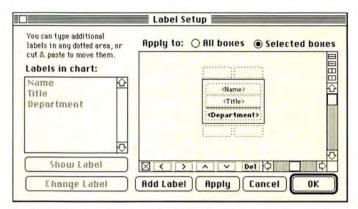
### NEW ON THE MENU REVIEWS



Org Plus is designed for creating organization charts. Making your organization chart reflect your company's actual organization is easy with the program's Styles menu.

in the information later. Boxes expand to hold whatever you type.

To create your subordinate boxes, you simply click on the appropriate tool — Subordinate, Co-worker, Manager, or Assistant — and then click on the box to which you want your new box connected.



Org Plus makes it easy to change what goes in all boxes, a group of boxes, or even a single box. This multifunction dialog box lets you adjust margins; select fonts; and add dividing lines, such as the one between Title and Department.

If you want to create several new boxes, just click on the tool the appropriate number of times. After you've clicked the box you want your new box or boxes connected to, Org Plus automatically draws the boxes and lines.

Once you've created your chart, you

can spice it up by using Org Plus' drawing and text tools.

### Re-Org

If you decide you want to change a box or group of boxes, just select them and use the Styles, Text, or Boxes menu to apply

Some people believe there only two types of accounting packages. Those that are really meant for use in a home, and those so complex you want to be placed into one.

In between these we proudly place MultiLedger, the accounting package for people who want something complete and well-thought out, but who may not have the letters 'CPA' stenciled on their hat.

Always operate with the proper tools. For starters, MultiLedger was designed with all four major functions included (G/L, A/R, A/P, and Inventory). Multiple module programs sometimes require multiple antacids.

Simplicity should never be confused with simplistic. Being logical and straightforward should be natural for all accounting packages. Not so. It doesn't take genius to arrange menu choices logically, just common sense. As MacWorld said, "MultiLedger has some of the simplest and most logical menus and entry screens of all of the programs I examined, and you'll never need to know the difference between a debit and a credit unless you want to." Simple, by design. Call us now at (800) 444-9922 and we'll be happy to send you a demo disk.



### THE ACCOUNTING PACKAGE EVEN THE BOSS CAN HANDLE

MultiLedger is a trademark of Checkmark Software. (©) 1991 Checkmark Software. 1520 East Mulberry Suite 200 Fort Collins, Colorado 80524 (303) 484-0429 fax. All other products are registered trademarks of their respective manufacturers. Bettmann Archives

### THE FIRST LASER PRINTER TO COMBINE HIGH STANDARDS AND LOW COST. THE \$999 PLP II.



ow you can have everything you ever wanted in a laser printer. Without paying the price.

Introducing the lowest priced laser printer in history: the \$999 PLP™ II from GCC Technologies. GCC developed the very first personal laser printer in 1987, and has over 20,000 satisfied users... more than everyone else combined.

Finally, a revolutionary printer at a revolutionary price. In fact, at \$999, it's nothing short of a technological marvel.

### Personal Desktop Printing.

Three years of research and development have put the finest printer technology right on your desktop: a combination of the newest third generation laser engine, GCC's own custom designed integrated circuits, and the market's most sophisticated QuickDraw™ imaging software yet.

Features such as a silent "sleep" mode, a very user-friendly LCD display and an envelope printing desk accessory have been carefully integrated. In the future, should your needs include PostScript,® there's even a userinstalled upgrade.

### The Highest Quality Printing.

Because PLP II includes 6 outline font families (for a total of 22 individual fonts), its razor-sharp, clean output can be shaped, scaled, and rotated to any point size — all at a full 300 dpi.

These outline fonts, combined with GCC's powerful QuickDraw imaging software, give you unlimited flexibility in producing perfect documents from such applications as PageMaker, Word, Excel, MacWrite, MacDraw, Persuasion. and Canvas®

### Even More Power: PLP IIS.

For those who demand even more power, there's also the PLP IIS.

With the PLP IIS, you get all the breakthrough technology of the PLP II, only now, you get it at a swift 8 pages per minute, making it the perfect solution for anyone printing a high volume of output.

You also get one megabyte of RAM, which can save you valuable time. For example, while PLP IIS is printing, your Macintosh can be processing the next page of your document.

And finally, with PLP IIS, you get a very powerful font library. In addition to the core set of 22 Bitstream® outline fonts, you also get a font package called Font Plus," which means you'll have over 40 fonts to choose from.

### Dealer or Direct: Your Choice.

GCC has made acquiring your new PLP II or IIS just as easy as using it.

Simply call us toll-free, and we'll give you the name of your nearest GCC Technologies dealer. Or order direct from us, with a 30-day money-back guarantee and \$9 overnight delivery. The awardwinning PLP II and the powerful PLP IIS. Everything you ever wanted in a laser printer. For less.

### 800-422-7777.

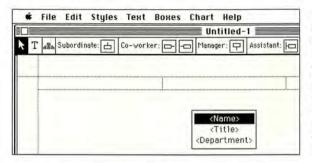
We gladly accept MasterCard, Visa, American Express, or your company's corporate purchase order.

### PLP II \$999, PLP IIS \$1499.



Peripherals With Vision."

### NEW ON THE MENU **REVIEWS**



You create new boxes in Org Plus by clicking on the tools Subordinate, Coworker, Manager, or Assistant - once for each box you want to create. Org Plus automatically draws the boxes and connecting lines.

new attributes. Before you print, you can use the Spacing command to adjust the horizontal or vertical distance between boxes. Then if you want the chart to fit on a specific number of pages, you select the Make Fit command before you print. This command is particularly smart - if the options you've selected won't reduce the chart enough to make it fit on the number of pages you've specified, you'll see a dialog box telling you the percentage by which you should reduce it in the Page Setup dialog box.

It sounds simple, and it is. The process

is so intuitive, you could easily create your first chart without even looking at the manual. But you'd be missing a lot if you didn't at least give the manual a cursory glance. It's well written and includes an excellent tutorial you can complete in less than an hour, a complete and well-organized reference section, and lots of timesaving shortcuts.

### The Bottom Line

Org Plus for Macintosh is a troublefree, easy-to-use program that does what it's supposed to - create organization

charts quickly and easily. When your organization changes, you can modify Org Plus charts just as easily.

The package comes with a 30-day, money-back guarantee and includes excellent context-sensitive on-line help. Technical support, which is free (but not toll-free) is prompt, and the staff obviously knows the product well.

If your job responsibilities include generating and maintaining organization charts, you'll definitely want a copy of Org Plus for Macintosh.

- Bob LeVitus

### Org Plus for Macintosh tttt1/2

Published by: Banner Blue, P.O. Box 7865, Fremont, CA 94537;

(415) 794-6850. Version: 1.0. List Price: \$195.



Please circle 131 on reader service card.

### EVERY YEAR, WE GIVE THE INDUSTRY A LESSON IN PRICE AND PERFORMANCE.



### CLASS IS NOW IN SESSION. Presenting the newly-priced \$1999 BLP II.

Business LaserPrinter™ "The future of PostScript." Last year, they gave our PLP™ II the MacUser Editors' Choice Award. But this time, we're really giving them something to study. Because now, we've done what was considered impossible. We've produced a printer that dramatically outperforms the Apple® LaserWriter® IINT, at half the cost: the \$1999 Business LaserPrinter II (BLP™ II).

### PostScript For Less.

This is the printer you've always wanted, at a price you never thought you'd see. With true Adobe™ PostScript and built-in AppleTalk®, you and everyone else on your Macintosh® network can immediately start producing the highest quality, 300 dots-per-inch (dpi) graphics and text using your favorite software. You even get the same 35 fonts as you get with the Apple LaserWriter. But now, the real lesson begins.

### Better At Any Price.

Even if money were no object, the BLP II would still be the printer of choice. It has 2 megabytes of RAM, user expandable to 4, plus a high-speed processor so it can image your document almost twice as fast as the IINT. And unlike the competition, the BLP II's SCSI port boosts performance and provides access to unlimited on-line fonts. Want more? How about a small footprint and silent sleep mode. Edge-to-edge printing. Userfriendly LCD front panel display, costsaving toner recycling system, and our advanced QuickEnvelope™ software that makes printing envelopes a snap. Still not enough?

### The Fast Track: BLP IIS.

Maybe you have a large network, with a heavy print load. A network you thought required the speed, power and price tag of a LaserWriter IINTX. Well.

think again. Because the BLP IIS gives you performance rivaling the IINTX at a considerably lower price: an 8-page-perminute printer for just \$2899. Whether you choose the BLP II or the BLP IIS, you get compatibility not only with Macintosh, but with IBM® and compatibles, using PostScript or the optional LaserJet II emulation. And you get it fast.

### **Dealer or Direct: Your Choice.**

Just call us toll-free. We'll give you the name of your nearest GCC Technologies dealer. Or order direct from us, with a 30-day money-back guarantee and \$9 overnight delivery. The \$1999 BLP II and \$2899 BLP IIS. What else can we say, except "class dismissed."

### 800-422-7777.



Peripherals With Vision."

Please circle 114 on reader service card.

### FileMaker Users!

make the real "upgrade" to...

### FILESFORCE

and establish a serious relationship with your data for only:

\$149

FILEMAKER II	FILEMAKER PRO	FILE FORCE
NO	NO	YES
0	0	8
8	7	16
le NO	NO	YES
	NO NO NO 0	NO         NO           NO         NO           NO         NO           NO         NO           0         0           8         7

Find 100 of 1,000 Records	:02	:03	:02
Sort 1,000 Records	:31	:32	:03
Delete 100 of 1,000 Records	:23	:25	:06
mport 1,000 Records	4:25	3:44	1:36

Benchmarks performed on a Macintosh Classic

"For those users who need to move beyond the flat-file managers, FILE FORCE is the logical next step, and we can recommend it enthusiastically." **MacWeek** 

"Buyers of FILE FORCE praised its ease of use."
PC WEEK

"ACIUS has paid careful attention to details that simplify life for casual users while offering a significant step up from the traditional flat-file managers such as FileMaker and Panorama." MacUser

"FILE FORCE can definitely hold its own in the database arena and it runs rings around the flat-file databases in capability." Computer Currents

"What sets this program apart is its impressive array of features." MacWeek

"...the program (FILE FORCE) has one of the nicest label-making facilities ever included in a mainstream database product." MACWORLD

### FILENFORCE



### To receive your copy of FILE FORCE

send us the front cover from your FileMaker or FileMaker Pro manual (any version) along with \$149 plus \$10 for Federal Express shipping and handling, (California residents please include 6% tax, Santa Clara County residents include 7% tax)

For more information, call (408) 253-3366. Checks, VISA, and MasterCard accepted. No purchase orders please. This offer good in the United States only. Good through May 31, 1991. The suggested retail price of FILE FORCE is \$395.

ACIUS, Inc. 10351 Bubb Road Cupertino, CA 95014 (408) 252-4444



### **QUICK CLICKS**



For gourmet-style page design at blueplate-special prices, nothing beats Timeworks' Publish It! Easy. Although you won't find high-end color-processing tools in this \$249.95 package, Publish It! Easy combines word-processing, graphics, page-layout, and presentation capabilities in one package.

Publish It! Easy 2.01 shows improvement to an already solid product. Timeworks has made the program faster and easier to use by automating routine procedures, and it's even added tools for creating slide presentations. Improved color support and the elimination of some minor quirks completes the list of enhancements in the latest version.

Experienced users of Publish It! Easy are familiar with the program's library palette, which displays hierarchical menu choices (such as fonts, sizes, styles, and alignments) without making you hold down the mouse button. This lets you use the mouse to select text or objects or try out different choices on the library palette.

Version 2.01's library palette gives users the flexibility to change the number of linked text frames on a page. The text reflows automatically, so you can try several layouts before deciding which one to save. The library palette also contains commands that automatically create text boxes for headlines and subheads, control paragraph indents, and specify vertical justification.

Version 2.01 supports gray-scale TIFF files. Although color support is still limited to eight spot colors, you can now select colors from Apple's Color Picker. You can also assign different colors to individual characters or words in a text frame. Publish It! Easy 2.01 doesn't produce knockouts when you print spot-color separations, however, nor does it support process-color separations or Pantone matching.

To produce a slide presentation with Publish It! Easy, you create a publication in which each page corresponds to one slide. Excellent text and graphics handling, combined with built-in painting and drawing tools, make it simple to produce effective slide shows with standard DTP techniques. There are 49 special effects

that take you from one slide to the next.

Timeworks has eliminated some of the annoyances of previous versions. The custom tabs now work reliably, but they need more attention. Although tabbed text printed perfectly in my tests, it still looked out of alignment on-screen. Previous incompatibilities with SuperLaserSpool, SuperMac's popular print spooler, have been eliminated, and you can now add words to the spelling checker's dictionary.

If you don't need process-color separations, Pantone matching, or more than eight spot colors, look no further than Publish It! Easy 2.01.

Timeworks, Inc., 444 Lake Cook Road, Deerfield, IL 60015; (800) 535-9497 or (708) 948-9200. Version 2.01. \$249.95.

Darryl Lewis



Evolution, from Image Club Graphics, offers the best value for font conversion. Like the first Mac font converter on the market, Altsys' Metamorphosis, Evolution converts Type 1, Type 3, and EPS outlines from one format to another. And because Evolution never requires a PostScript printer, it's tailor-made for users who want high-quality type but can't afford a high-priced printer.

Using Evolution is simple. You select fonts installed in your System, choose the conversion format (Type 1, Type 3, or EPS outlines), and click on the Convert button.

Unlike Metamorphosis, which lets you generate several conversions at once, Evolution requires two passes to convert a font to both Type 1 and EPS outlines, because the software lets you select only one output format at a time. Evolution also does not produce AFM (Adobe Font Metrics) files, as does the Altsys software.

Evolution does provide sensitivity controls that help with complex fonts that may resist conversion with Metamorphosis. You can also specify a text string to be created with the EPS outline format, and you can output full or partial character sets as printer fonts.

Evolution converts Type 3 fonts produced by a variety of software, including Fontographer (except for version 1.0), Icarus M, and Bitstream. FontStudio compatibility was added recently to Evolution. An old Fontographer font was the only font that stymied Evolution — the

program refused to convert it.

You need at least a Macintosh Plus and System 6.0.4 or later to use Evolution. A hard-disk drive is recommended but isn't essential.

Watch for a new program, FontMonger, from Ares, a company whose staff has been long involved in type-related software. Some of these folks include Russ McCann (Adobe/Emerald City Software) and Larry Applegate, Ernie Brock, and Robin Henson (coauthors of FontStudio). FontMonger may be available by the time you read this. It combines the features of Evolution and Metamorphosis and lets you manipulate characters as ParaFont does. FontMonger's sleek, intuitive interface makes the other packages look like clumsy DOS imports. It supports TrueType and costs \$99.95.

Image Club Graphics, Suite 5, 1902 Eleventh St. S.E., Calgary, Alberta, Canada T2G 3G2. (800) 661-9410. Version 1.02, \$99.

— Gregory Wasson



MIDIplay, from Opcode Systems, takes the kinks out of integrating MIDI sequences with Mac-based multimedia presentations. No more little black boxes with blinking lights, yards of cables, and jungles of mysterious connectors. MIDIplay is a HyperCard stack equipped with XCMDs that play standard MIDI files from within HyperCard, Silicon Beach's SuperCard, and MacroMind Director.

Although MIDIplay's main job is to export MIDI music files to buttons, stacks, or the Clipboard, it also lets you paste control buttons—including start, continue, and stop— and a MIDI setup button to stacks.

The program also includes goodies for manipulating sequences and tracks. A transposition function lets you change the pitch of individual or entire sequences. Initial volume settings can also be altered in each track. Tempo controls speed up or slow down sequences. Any changes you make, however, affect the entire track, which means that you can't transpose a trumpet part up one octave for the first three measures of a sequence and then transpose it back down one octave for the remainder of the piece, for example. Multiple changes such as these must be made with a sequencer program and then saved

### o you like things

The original mail order source for Macintosh products. Since 1984.

### MONEY BACK GUARANTEE

The majority of products we carry are offered under a 30 or 60 day Money Back Guarantee. The companies participating in this program are highlighted in red. If you are not satisfied with your purchase of any of these products, call us for an authorization and return it with all of the original packaging within the guarantee period for a refund check (or credit on your credit card). We reserve the right to limit quantities on such returns.

### LATEST VERSIONS

We only carry the very latest versions of products so, rest assured, that's what you'll receive when you order. The version numbers shown here are based on the best available information at press time. If a newer version has come out in the meantime, or if there's been a price change, we'll let you know before taking your order. Also, all software is not copyprotected, unless indicated otherwise by (CP).

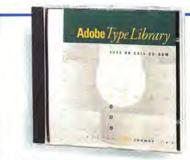


### A Lasting Impression

5465 RésumExpen-Professional résumé composition. 40+ fully-formatted MS Word résumé templates. Highlight the text & substitute your own information. Rated 4 Mice by MacUser. See line listing for other editions. . . . . . . . . \$48.

### **DAILY BUSINESS**

*	Aatrix Software 30 day MBG	
5872		2.
3976	Payroll 3.5 9	9.
8053		
	Abacus Concepts	
8937	MacSpin 3.01	9.
4482	StatView SE+Graphics 1.03 19	9.
	StatView II 1.03	9.
	SuperANOVA 1.1 (for Plus/SE or II) ea. 30	9.
5907	Statview II/SuperANOVA Bundle 56	9.
1	Acius 30 day MBG	
	4D Write 1.0.1 or 4D Calc ea. 22	9.
4024	4th Dimension Runtime (4 user) 24	9.
5618	4th Dimension 2.1.1 48	9.
7838		5.
6948	File Force 1.0.1	



### Adobe Systems

8794 Adobe Type On Call CD/ATM-Fastest, most economical way to buy Adobe Type. Includes the CD-ROM disc, ATM, & two free typeface families out of a selection of eight. Call us anytime to unlock additional typeface families \$47.

9443 Adobe Type On Call CD/ATM & Pora Drive CD-ROM Bundle .....



### CD Technology

8057 Porta Drive CD-ROM-A compact & lightweight CD-ROM drive with 683 Mb capacity & Mac Interface Kit. Porta Drive CD-ROM also includes phone jacks and PlayCD HyperCard utility MacUser: 41/2 Mice. . . \$649.

7	Advanced Software 30 day MBG
	DocuComp 1.5
	A Lasting Impression
	ResumExpert or Cover Letters . ea. 48.
	Sales & Marketing, Management Edition
	Computer Science & Engineering ea. 48.
1	ASD Software 30 day MBG
	Planisoft (1 user) 195.
	(5 user) 579. 7621 (10 user) 839.
	Ashton-Tate
8961	Full Impact 2.0 159.
	Avery 60 day MBG
	MacLabel Pro 1.0 48.
	Baseline Publishing 30 day MBG
8882	Vantage 1.5.1
	Thunder 7 1.0 57.
1	Chang Labs 30 day MBG
	C.A.T. 3.0 special 249.
	Checkfree Corp 30 day MBG
6928	Checkfree Mac 1.5 19.
*	CheckMark Software 60 day MBG
	CashLedger 1.3A 115.
	Payroll 4.5
	MultiLedger 1.3 235.



### Microsoft ... 30 day MBG

2865 Excel 2.2A-A powerful spreadsheet with analytical strength & graphic output. Integrate worksheets into Word, PowerPoint, & PageMaker for flexibility when creating presentations. Upgrade to 3.0 from Microsoft for \$50 + S&H . . \$245.

NOIVI DU	ше
-	Chipsoft 30 day MBG
8059	TurboTax Personal/1040 1.0 50.
	Claris
	MacWrite II 1.1V1 139.
8216	FileMaker Pro 1.0V1 215.
1125	MacProject II 2 11/3 359
1120	MacProject II 2.1V3
4700	BigThesaurus 1.0
1769	Coach Professional 3.1 124.
1700	DeltaPoint 60 day MBG
9067	Tosto 1 0
0907	Taste 1.0
5572	FoxBASE+/Mac 2.01 289.
1911	FoxBASE+/Mac Multi-user 409.
4044	Franklin Software 30 day MBG
7070	Language Master 2.0 45.
1010	Informix
40EE	Winer 1 1 A
4955	Wingz 1.1A
0405	Ovieles 1 5
2425	Quicken 1.5
0044	Tan Davis 0.1
8941	TopDown 2.1
0004	Lifetree Software 30 day MBG
6984	Correct Grammar 2.0
7740	MacFlow 3.5
7/18	MacFlow 3.5
//15	MacSchedule 2.5 139
8613	MacSchedule Plus 1.0 199
0700	MECA 60 day MBG
2/96	Managing Your Money 4.0 99  Microlytics 60 day MBG
	Microlytics 60 day MBG
7506	Inside Information 1.0 68
	Random House Encyclopedia 68
,	Microsoft 30 day MBG
2884	Works 2.00C
4969	Word 4.0B 245
	Excel 2.2A
5454	The Microsoft Office 525
2237	Microsoft Press
6703	Inside SuperCard Book 15
7680	Word on Apple Mac Book 15
	Works on Apple Mac Book 15
	Excel In Business Book 18
6500	
1	Niles & Associates 30 day MBG
	EndLink 1.1.3
4602	
8010	EndNote Plus 1.0

### incredibly fast?



7692 Informed Designer v. 1.0.4-If forms are part of your life, Informed should be too. Design with Informed Designer, then fill out and use the unique capabilities of Informed Manager \$159. 

-	Nolo Press 30 day MBG
	For the Record 2.0 30.
	WillMaker 4.0 (not valid in LA.) 35.
	Odesta 30 day MBG
	Double Helix III 3.0R6
	DataDesk 3.0 459.
	Paragon Concepts
5683	Nisus 3.04 245.
	Portfolio Systems 30 day MBG
7992	DynoPage 1.0 72.
6916	Dynodex 2.0
*	PowerUp 30 day MBG
7696	Calendar Creator 1.0 35.
7697	Letter Writer Plus 52.
7694	Address Book Plus 2.0 57.
	Fast Forms 2.0 105.
1	Que Corp./RightSoft 30 day MBG
7482	RightWriter for the Mac 3.10 54.



Survivor Software ... 30 day MBG 3289 MacMoney 3.5—Award-winning basic accounting for personal or small business use. Track more than just one checkbookassets and liabilities too. Easy to use with

	Reality Technologies
6929	WealthBuilder 1.0 \$145.
-	Reference Software 30 day MBG
6268	Grammatik Mac 2.0 50.
	Satori Software
3320	BulkMailer 3.25 75.
7	Sensible Software 30 day MBG
3375	Sensible Grammar 1.6 51.
7	Shana 30 day MBG
8201	Informed AutoForm 1.0 75.
8810	Informed Manager 1.0 99.
7692	Informed Designer v. 1.0.4 159.
7	Softstream Int'l 30 day MBG
8175	HyperTax Tutor 1.0 59.
2,32	Softsync/BLOC
7129	Accountant, Inc. 2.0 339.
	Softview
	MacInTax Personal Edition 1990 59.
	if:X Business Expense Reports 1.0 . 48.
	if:X Personal Tax Analyst 1.0 48.
	if:X Forms Designer 1.0 169.
	Software Discoveries 30 day MBG
8118	
0000	Survivor Software 30 day MBG
3289	MacMoney 3.5 59. Symantec 30 day MBG
2400	More 3.0
3422	Symmetry 30 day MBG
6060	KeyPlan 1.0
0009	Synergy 30 day MBG
6617	KaleidaGraph 2.1 145.
0017	SYSTAT, Inc 30 day MBG
	SYSTAT 5.1 599.
7410	Teleware 30 day MBG
	M.Y.O.B. 2.05
7010	TIMESLIPS 30 day MBG
8939	Timeslips III Accounting Link 1.0 52.
2000	Timeslips III Accounting Link 1.0

### 3800 WordPerfect Mac 2.0 . . . . . . . . . 279. GRAPHICS & DESIGN

3781 LaserWriter Label Pack (Qty. 216) . . 18. 6926 myDiskLabeler III 3.0 . . . . . . . . . . 42. 4976 StickyBusiness 1.4 . . . . . . . . . . 51. ★WordPerfect ... 60 day MBG

2986 Timeslips III 2.0E. . . . . . . . . . . . . 195. ★T/Maker ... 30 day MBG 3639 WriteNow 2.2A/Grammatik Mac . . 117. 7360 WriteNow 2.2 (3-Pak) . . . . . . . . . 245. 8206 SmartBundle (WriteNow, Full Impact 1.1, SuperPaint 2.0 & RecordHolder Plus) 215. ★Williams & Macias ... 30 day MBG

	Abbott Systems 30 day MBG
8052	Cheshire 1.0
	Adobe Systems
	Adobe Type Library (Vol. 1-205) cal
	Adobe Type Reunion 1.0 38
	Adobe Type Manager 2.0 55
	Adobe Type On Call CD/ATM 47
6053	Adobe Plus Pack 109
6156	
	TypeAlign for ATM 1.0.4 59
6985	Adobe ATM/TypeAlign Pack 89
6671	Adobe Type Set 1 55



Aldus/Silicon Beach ... 30 day MBG 1330 Aldus FreeHand 3.0-Delivers unprecedented control over the entire design & illustration process. Features on-screen palettes, flicker free drawing, rapid screen redraw, WYSIWYG, view or print 32-bit TIFF images & easier to use \$399.

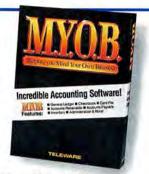
		_
6677	Adobe Type Set 2	. 55.
7587	Adobe Type Set 3	
8042	Adobe Type Sets 1-2-3 Bundle	199.
8171	Adobe Illustrator 3.0 (w/ATM)	349.
6644	Adobe Photoshop 1.07	499.
5001		119.
	Smart Art I, II, III, or IV ea	. 59.
7	Aldus/Silicon Beach 30 day I	
6674	Personal Press 1.0	199.
3506	SuperPaint 2.0A	135.
8811	SuperPaint/Personal Press Bundle	279.
3980	Digital Darkroom 2.0	259.
3507	Super3D 2.1	339.
4751	Aldus Persuasion 2.0	329
7467	Aldus PrePrint 1.0	329.
1330	Aldus FreeHand 3.0	399.
7088	Aldus PageMaker 4.0	499.
8054	Aldus Design Team	
		_



Microsoft ... 30 day MBG 9444 Microsoft Mail 3.0 (1-5 user)—Electronic mail system with new features such as client caching, push notification, multiple file attachments, personal address books, and increased overall speed and power. Requires Mail Server. . \$269.

280U

### Then our shipping



### Teleware ... 30 day MBG

7616 M. V.O.B. 2.05—Incredible accounting software. "Best business deal on the Mac"—MacUser Eddy Awards. A/R, A/P, G/L, Checkbook, Inventory, and Card File. Easy to set up and use, full integration, custom forms. \$142.

	Altsys
5425	Art Importer 2.0 85.
6499	Metamorphosis 1.5
1195	Fontographer 3.2 259.
	Ares Software 30 day MBG
8878	FontMonger 1.0 63.
7	Baseline Publishing 30 day MBG
8055	Screenshot 1.2
8872	MasterPaint 1.0 51.
7784	Color MacCheese 1.05 57.
7828	Exposure Pro 1.1 69.
	Bright Star Technology
6093	interFACE 1.0 249.
	Broderbund Software
9351	Kid Pix 1.0
1427	The Print Shop 1.3.2 35.
6281	TypeStyler 1.5.2 115.
-	Casady & Greene 60 day MBG
8879	Fluent Font Library 4.0 99.
	Claris
1123	
1117	MacDraw II 1.1V2
8007	Claris CAD 2.0 645.
7	Creative Software 30 day MBG
6645	Easy Color Paint 2.0 45.



### SuperMac Tech. ... 60 day MBG

5625 PixelPaint Professional 2.0—Multiple/larger documents, 8-bit masking, image merging, color correction, pressure sensitive brushes, PixelPaper, and more \$459. 3380 PixelPaint 2.1 149.

-	Custom Applications 30 day MBG
	Freedom of Press Light 3.0 (17 fonts) \$55.
	Freedom of Press 3.0 (35 fonts) 255.
	DeltaPoint 60 day MBG
	DeltaGraph 1.5
	Deneba Software 30 day MBG
	UltraPaint 1.01 125.
	Canvas 2.1.1 189.
	Dream Maker 30 day MBG
,	
	Cliptures: Business or Sports ea. 68.
	Electronic Arts
4315	Studio/8 2.0 189.
8056	Studio/32 1.0 449.
4	Farallon Computing 30 day MBG
6770	MacRecorder Voice Digitizer 89.
	MacRecorder Sound System 2.02 159.
	Foundation Publishing 60 day MBG
	Comic People or Kid Stuff ea. 21.
6728	Comic Strip Factory 1.6 37.
	Comic Strip/People & Kid Bundle 71.
0.100	Innovative Data Design
2417	MacDraft 2.1
4707	Dreams 1 1 419



### Multi-Ad Services

8767 Multi-Ad Creator 2.5—It's all here: Power, speed, precision, color separations. The high-end choice for producing complex pages—fast. MacUser says "If you create ads, get it." . \$499.

	Letraset
	ImageStudio 1.7 139.
2621	Ready Set Go! 4.5A 165.
6300	
6302	DesignStudio 1.0 489.
6301	ColorStudio 1.1 599.
	Linguist's Software 60 day MBG
	Over 100 language fonts call
4	Loop Software 30 day MBG
8726	OverView 1.0
	MacroMind 30 day MBG
	MediaMaker 1.0 489.
	MacroMind Director 2.0 629.
	Mainstay 30 day MBG
	Capture 3.0 42.
-	MediaLab Tech 30 day MBG
8218	Picture Link 1.1
	MicroFrontier 30 day MBG
	ENHANCE 1.2 235.
*	MicroMaps 30 day MBG
7554	MapArt (Paint)
7556	MapArt (PICT)
7555	MapArt (EPS)
,	Microsoft 30 day MBG
	PowerPoint 2.01 245.



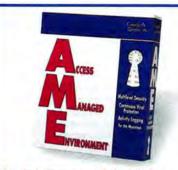
### Paracomp ... 30 day MBG 8957 Swivel Pro/MacRender/Man Bundle—Combines one of the best selling 24-bit 3D programs with

the industry's most advanced rendering software to create photographic quality images . \$899. 7441 Swivel 3D Professional 1.0. . . . . . . . . . . 435.

	Multi-Ad Services
8767	Multi-Ad Creator 2.5 499.
	PANTONE
7466	Process Color Imaging Guide 49.
,	Paracomp 30 day MBG
	SwivelArt 1.0 82.
7441	
8957	Swivel Pro/MacRenderMan Bundle 899.
7839	FilmMaker 1.0 435.
	Pixar
8965	Pixar Showplace 1.0 469.
8966	MacRenderMan 549.
	Quark
4621	QuarkStyle 1.01 199.
7612	QuarkXPress 3.0 519.
,	Solutions, Inc 60 day MBG
3446	The Curator 1.05 87.
7	Springboard 30 day MBG
3530	Certificate Maker 2.02 22.
	Strata
	Stratavision 3D 1.5.5
7772	Stratavision 3D SRX/Renderman . 999.
0510	Strategic Mapping
6518	ATLAS * MapMaker 4.5 369.
0000	SuperMac Tech 60 day MBG
3380	PixelPaint 2.1
	PixelPaint Professional 2.0 459.
	rSymmetry 30 day MBG Mariah 1.0
	Mariah 1.0
9251	lcon It! 2.1
0231	Magic Typist, Art Fonts, or
	Sound Clips Vols. 1-4 ea. 49.
8263	
8261	Art Clips 2
8248	
-	3G Graphics
3942	
4583	
6379	
7	Timeworks 30 day MBG
	Publish It! Easy 2.0 145.
	Ventura Software
8962	Ventura Publisher 3.0 499.
	Wildflower 30 day MBG
6512	SnapJot 3.0

**★Zedcor ... 60 day MBG**3986 DeskPaint & DeskDraw 3.03 . . . . 113.

### may leave you aghast.



### Casady & Greene ... 60 day MBG

7443 Á.M.E. 1.1.2—A complete security, virus, & auditing program for the Mac. Control access to disk, DA's, printers, & files. Prevents illegal copying & running of unauthorized programs. . . \$159. 7444 (5 user) . . . 509. 7831 (10 user) . . . 849.

### **PROGRAMMING & UTILITIES**

4	Abbott Systems 30 day MBG
	CanOpener 1.1 62.
-	Advanced Software 30 day MBG
	In touch 1.0 40.
	Affinity Microsystems 60 day MBG
7835	Tempo II Plus 105.
4	Aladdin Systems 30 day MBG
6169	Shortcut 1.0.1
6740	Stufflt Deluxe 2.0 62.
7	Aldus/Silicon Beach 30 day MBG
5100	SuperCard 1.5 199.
	ASD Software 30 day MBG
9440	MaccessCard Reader (req. FileGuard) 299.
	MaccessCard/FileGuard (1) Bundle 399.
	FileGuard Extended 2.5.2 (1 user). 139.
	(5 user) 349. 7423 (10 user) 579.
	Baseline Publishing 30 day MBG
7783	INIT Manager
6656	Personality 1.0.1
- 1	Berkeley Systems 30 day MBG
5737	r Berkeley Systems 30 day MBG After Dark 2.0T
5737 1541	r Berkeley Systems 30 day MBG           After Dark 2.0T
5737 1541	RBerkeley Systems 30 day MBG         After Dark 2.0T
5737 1541 2269	RBerkeley Systems 30 day MBG         After Dark 2.0T
5737 1541 2269 7443	RBerkeley Systems 30 day MBG         After Dark 2.0T
5737 1541 2269 7443 7444	RBerkeley Systems 30 day MBG         After Dark 2.0T
5737 1541 2269 7443 7444	Rerkeley Systems       30 day MBG         After Dark 2.0T       22         Stepping Out II 2.02       49         **Casady & Greene       60 day MBG         QuickDEX 1.4D       34         A.M.E. 1.1.2 (single)       159         A.M.E. (5 user) 509. 7831 (10 user)       849         **CE Software       60 day MBG
5737 1541 2269 7443 7444 4689	### Rerkeley Systems 30 day MBG   After Dark 2.0T 22. Stepping Out II 2.02 49.  ### Casady & Greene 60 day MBG   QuickDEX 1.4D 34.    A.M.E. 1.1.2 (single) 159.    A.M.E. (5 user) 509. 7831 (10 user) 849.  ### CE Software 60 day MBG   MockPackage Plus Utilities 4.4 31.
5737 1541 2269 7443 7444 4689 1727	### Rerkeley Systems 30 day MBG  After Dark 2.0T 22.  Stepping Out II 2.02 49.  ### Casady & Greene 60 day MBG  QuickDEX 1.4D 34.  A.M.E. 1.1.2 (single) 159.  A.M.E. (5 user) 509. 7831 (10 user) 849.  ### CE Software 60 day MBG  MockPackage Plus Utilities 4.4 31.  Calendar Maker 3.01 31
5737 1541 2269 7443 7444 4689 1727 6278	Rerkeley Systems 30 day MBG After Dark 2.0T 22. Stepping Out II 2.02 49. Casady & Greene 60 day MBG QuickDEX 1.4D 34. A.M.E. 1.1.2 (single) 159. A.M.E. (5 user) 509. 7831 (10 user) 849. rCE Software 60 day MBG MockPackage Plus Utilities 4.4 31. CalendarMaker 3.01 31. DiskTop 4.0 63.
5737 1541 2269 7443 7444 4689 1727 6278 7518	Rerkeley Systems 30 day MBG After Dark 2.0T 22. Stepping Out II 2.02 49. Casady & Greene 60 day MBG QuickDEX 1.4D 34. A.M.E. 1.1.2 (single) 159. A.M.E. (5 user) 509. 7831 (10 user) 849. CE Software 60 day MBG MockPackage Plus Utilities 4.4 31. CalendarMaker 3.01 31. DiskTop 4.0 63. Alarming Events 1.01 84.
5737 1541 2269 7443 7444 4689 1727 6278 7518 8024	Rerkeley Systems 30 day MBG After Dark 2.0T 22. Stepping Out II 2.02 49. Casady & Greene 60 day MBG QuickDEX 1.4D 34. A.M.E. 1.1.2 (single) 159. A.M.E. (5 user) 509. 7831 (10 user) 849. CE Software 60 day MBG MockPackage Plus Utilities 4.4 31. CalendarMaker 3.01 31. DiskTop 4.0 63. Alarming Events 1.01 84. QuicKeys <sup>2</sup> 2.0.1 94.
5737 1541 2269 7443 7444 4689 1727 6278 7518 8024	Rerkeley Systems 30 day MBG After Dark 2.0T 22. Stepping Out II 2.02 49. Casady & Greene 60 day MBG QuickDEX 1.4D 34. A.M.E. 1.1.2 (single) 159. A.M.E. (5 user) 509. 7831 (10 user) 849. CE Software 60 day MBG MockPackage Plus Utilities 4.4 31. CalendarMaker 3.01 31. DiskTop 4.0 63. Alarming Events 1.01 84. QuicKeys <sup>2</sup> 2.0.1 94. Central Point 30 day MBG
5737 1541 2269 7443 7444 4689 1727 6278 7518 8024	Rerkeley Systems 30 day MBG After Dark 2.0T 22. Stepping Out II 2.02 49. Casady & Greene 60 day MBG QuickDEX 1.4D 34. A.M.E. 1.1.2 (single) 159. A.M.E. (5 user) 509. 7831 (10 user) 849. CE Software 60 day MBG MockPackage Plus Utilities 4.4 31. CalendarMaker 3.01 31. DiskTop 4.0 63. Alarming Events 1.01 84. QuicKeys <sup>2</sup> 2.0.1 94. Central Point 30 day MBG Copy II Mac 7.2 25.
5737 1541 2269 7443 7444 4689 1727 6278 7518 8024 5040 5041	Rerkeley Systems 30 day MBG After Dark 2.0T 22. Stepping Out II 2.02 49. Casady & Greene 60 day MBG QuickDEX 1.4D 34. A.M.E. 1.1.2 (single) 159. A.M.E. (5 user) 509. 7831 (10 user) 849. CE Software 60 day MBG MockPackage Plus Utilities 4.4 31. CalendarMaker 3.01 31. DiskTop 4.0 63. Alarming Events 1.01 84. QuicKeys <sup>2</sup> 2.0.1 94. Central Point 30 day MBG
5737 1541 2269 7443 7444 4689 1727 6278 7518 8024 5040 5041 7830	Rerkeley Systems 30 day MBG After Dark 2.0T 22. Stepping Out II 2.02 49. Casady & Greene 60 day MBG QuickDEX 1.4D 34. A.M.E. 11.2 (single) 159. A.M.E. (5 user) 509. 7831 (10 user) 849. CE Software 60 day MBG MockPackage Plus Utilities 4.4 31. CalendarMaker 3.01 31. DiskTop 4.0 63. Alarming Events 1.01 84. QuicKeys <sup>2</sup> 2.0.1 94. Central Point 30 day MBG Copy II Mac 7.2 25. Mac Tools Deluxe 1.0 79. CConnectix 30 day MBG Maxima 1.0.9 45.
5737 1541 2269 7443 7444 4689 1727 6278 7518 8024 5040 5041 7830 6123	Rerkeley Systems 30 day MBG After Dark 2.0T 22. Stepping Out II 2.02 49. Casady & Greene 60 day MBG QuickDEX 1.4D 34. A.M.E. 1.1.2 (single) 159. A.M.E. (5 user) 509. 7831 (10 user) 849. CE Software 60 day MBG MockPackage Plus Utilities 4.4 31. CalendarMaker 3.01 31. DiskTop 4.0 63. Alarming Events 1.01 84. QuicKeys <sup>2</sup> 2.0.1 94. Central Point 30 day MBG Copy II Mac 7.2 25. Mac Tools Deluxe 1.0 79.

	Dantz Development 30 day MBG
5255	Retrospect 1.2 \$147.
7945	Retrospect Remote 1.2 264.
7946	Remote (10 Pack of inits) 147.
*	Design Science 30 day MBG
7887	MathType 2.0
	Digitalk 60 day MBG
5166	SmallTalk/V Mac 1.1
	Dubl-Click Software
7974	ClickChange 1.04 40.
	Calculator Construction Set 2.09.6 . 45.
*	Fifth Generation 30 day MBG
4287	PYRO! 4.0
3955	Suitcase II 1.2.8 49.
	FastBack II 2.5 or DiskLock 2.0 118.
8284	SuperSpool 5.0 62.
8286	SuperLaserSpool 2.02 93.
	ICOM Simulations
4084	On Cue 1.3
4085	TMON 2.8.4
	Insight Development 30 day MBG
6171	MacPrint 1.23 94.



com	plete undelete, isolate bad sectors, & Virex. 89. Complete Undelete—Recovers deleted files . 48.
	JAM Software 30 day MBG
	Smart Alarms 3.0 w/Appt. Diary 3.1 63.
	Smart Alarms 3.0 (1-4 users) 125.
	Kent Marsh Ltd 30 day MBG
	QuickLock 2.0
2591	The NightWatch 1.03 85.
6134	MacSafe II
-	Kiwi Software 60 day MBG
6267	KiwiEnvelopes! 3.1
7445	KiwiFinder Extender 1.02 64.
. 1	Loop Software 30 day MBG
5442	PictureBook 3.2 39.
-	Magic Software 30 day MBG
7267	AutoSave II 2.0 27.
7270	Backmatic 2.0 50.
*	Microcom 30 day MBG
8562	Complete Undelete 48.
4803	Virex 3.1
8561	911 Utilities 89.



### Broderbund Software

9351 Kid Pix 1.0—Amazing paint program for kids. Combines special effect art tools, picture stamps, sounds & magic screen transformations to turn the computer into a magical art studio. Every brush & tool has its own sound effect \$29.

*	Microseeds Pub 60 day MBG
7068	INITPicker 2.0
4210	Screen Gems 1.0 39.
2913	
7116	Rival 1.1.4
*	Microsoft 30 day MBG
4471	QuickBasic 1.0 64.
	Multi-Ad Services
8850	Multi-Ad Search 1.0 125.
*	Now Software 30 day MBG
6925	Now Utilities 2.0
6739	Prototyper 3.0 184.
	Olduvai
4503	MultiClip 2.0 special 69.
*	ON Technology 1 year MBG
6385	On Location 1.02
	Palomar Software 30 day MBG
8210	PLOTTERgeist 1.1 199.



Palomar Software ... 30 day MBG 8210 PLOTTERgeist 1.1—Chooser-level driver connects plotters to your Mac. Provides background plotting to free up your computer; presentation-quality text capability; works with virtually all applications. . . . . . . . . . . . . \$199.

280U



MacConnection

14 Mill Street, Marlow, NH 03456 603/446-7791 EAX 603/446-7791

15 Marlow, NH 03456 603/446-7791 EAX 603/446-7791

### 30 and 60 Day MDG

### Every order in sight

7	Salient Software 30 day MBG
7404	DiskDoubler 3.1 \$44.
1	Solutions, Inc 60 day MBG
	SmartScrap & The Clipper 2.1 56.
3449	SuperGlue II 2.01 75.
7	SuperMac Tech 60 day MBG
3377	DiskFit 2.0
	Symantec 30 day MBG
5176	Symantec AntiVirus for Mac (SAM) . 65.
	Symantec Utilities for Mac (SUM II) . 96.
6748	Norton Utilities for the Mac 1.0 84.
	THINK Pascal or THINK C ea. 165.
	Synex 30 day MBG
6665	MacPhonebook 32.
7147	MacEnvelope 5.02 57.
6666	MacEnvelope + 185.
7	Systems Compatibility 30 day MBG
7872	Software Bridge 1.0 79.
*	Tactic Software 30 day MBG
	MasterFinder 1.0 49.
	Teletypesetting 30 day MBG
8601	TScript Basic
8058	TScript 1.3 91.



### Custom Applications ... 30 day MBG 8037 Freedom of Press Light 3.0—Print PostScript text & graphics files on non-PostScript printers. This award-winning software includes 17 outline fonts & supports ATM & Type 1 fonts. . \$55. 6517 Freedom of Press 3.0 (35 fonts) . . . . . 255.

	Wolfram Research
8273	Mathematica Enhanced 1.2 699.
	Zedcor 60 day MBG
3985	ZBasic 5.0
	CD-ROM
	Adobe Systems
8794	Adobe Type On Call CD/ATM 47.
9443	Adobe Type On Call CD/ATM &
	Porta Drive CD-ROM Bundle 659.
	CD Technology
8057	Porta Drive CD-ROM 649.
7686	Porta Drive & MS Office CD-ROM . 999.
	Chinon
8813	CDA-431 CD-ROM Drive 639.
1	Highlighted Data 30 day MBG
	Webster's Dictionary (CD-ROM) 159.
7	HyperGlot 30 day MBG
	Learn to Speak French (CD-ROM) . 69.
7829	Learn to Speak Spanish (CD-ROM) 69.



Symantec ... 30 day MBG 5176 Symantec AntiVirus for Mac (SAM)—Bestselling, highest rated virus Protection, Detection, & Repair program for the Mac is now even better. New SAM version has enhanced update & repair capabilities, faster scanning & more! \$65.

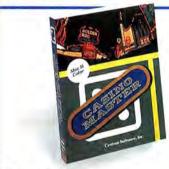
	r Wilcrosoft 30 day MBG
6382	The Microsoft Office (CD-ROM) 599
	Multi-Ad Services
	ProArt Trilogy (CD-ROM series) ea. 259
	NEC
	Image Gallery, Type Gallery PS, Photo
	Gallery or Clip-Art 3D ea. 246
9441	CDR36 CD-ROM Portable Drive 349
6743	Mac Driver Kit 64
	Passport Designs
8255	Desktop Music Creativity (CD-ROM) 189
8607	Music Production Kit (CD-ROM) . 1249
	Toshiba
6749	XM 3201 CD-ROM Drive 699
7	Voyager 30 day MBG
9328	Voyager CD Audiostack 69
9326	Beethovan Symphony No. 9 (CD-ROM) 69
9327	Igor Stravinsky (CD-ROM) 69

### **EDUCATION & RECREATION**

	Accolade	
	Stratego or Balance of the Planet ea	29
8217	Ishido: The Way of the Stones	32
8220	Jack Nicklaus Greatest 18. ,	34



7	Aldus/Silicon Beach 30 day MBG
	Dark Castle or Beyond Dark Castle ea. \$32.
*	Ars Nova 30 day MBG
1215	Practica Musica 2.2 69.
1	Baseline Publishing 30 day MBG
7785	Talking Moose 3.0
1	Beacon Technology 30 day MBG
	HyperBible 2.0 (KJ or NI) ea. 125.
-	Bogas Productions 60 day MBG
9279	Studio Session MIDI Utility 59.
	Super Studio Session w/Music Library 99.
0,00	Bright Star Technology
1402	Alphabet Blocks 1.0 30.
1702	Broderbund Software
1311	Type! 1.0 18.
6516	The Playroom 1 1 (CP)
0310	The Playroom 1.1 (CP)
0000	Carmen Sandiego Series (CP)ea. 29.
	SimEarth 1.0
4966	
5871	and the second state of the second se
	Bullseye
4074	P51 Mustang (CP)
	Carina Software
5726	Voyager 1.2 87.



### Centron Software

Casino Master—Turn your Mac into a casino!
Realistic graphics, help/advice windows, card
counting, manual with rules/strategy. Includes
Blackjack, Craps, Roulette, Baccarat and Poker.
8525 (BeW)...\$41. 8524 (Color)...\$45.

*Casady & Greene 60 day MBG 2268 Crystal Quest 2.2	29. 41. 45.
Mission Starlight or Sky Shadow ea. 2  Centron Software  8525 Casino Master (B&W)	29. 41. 45.
Centron Software  8525 Casino Master (B&W)  8524 Casino Master (Color)  Coda Music Systems	41. 45.
8525 Casino Master (B&W)	15.
8524 Casino Master (Color)	15.
Coda Music Systems	
	19
	19
8188 MusicProse 2.0	
5604 Finale 2.5 54	19.
Davidson & Associates	
1734 Math Blaster! 1.0 (CP)	29.
6128 Math Blaster Mystery (CP)	29.
	35.
EARTHQUEST	-
8050 EARTHQUEST 1.0	18
Electronic Arts	0,
6716 Pipe Dreams 1.0	17
8643 Harpoon	19.
★Great Wave 30 day MBG	
KidsTime, Amer. Discov., KidsMath ea. 2	
4334 NumberMaze (B&W) 26. 8527 (Color) 3	36.
NumberMaze Decimals & Fractions	
8043 (B&W) 26. 8044 (Color) 3	36.
2271 Concertware & MIDI	

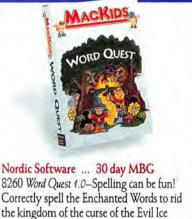
### goes out overnight



### Passport Designs

8250 Encore 1.3.1—Play, compose & print music. Supports tempo changes, industry standard MIDI files & real time transcription . . . . \$379. 9442 AudioTRAX—Powerful MIDI sequencer with ability to record & playback 2 digital tracks. 129.

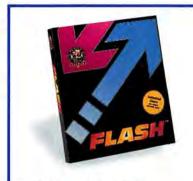
### ★HyperGlot Software ... 30 day MBG Word Torture 4.0 - Beginner to Advanced (Span., Fren., Germ., Ital. & Rus.) ea. 35. Pronunciation Tutor - Beginner (Span., Fren.) ea. 35. (Germ., Chin.) 39. Verb Tutor - Intermediate (Spanish, French, German) . . . ea. 39. 9349 Chinese Survival Manual ...... 39. 9348 Chinese Writing Tutor . . . . . . . . . . . 39. 6611 Kanjimaster - Beg. (Japanese) . . . . 99. Individual Software 7425 Training for Microsoft Word 4.0 . . . . 35. 4990 Training for Aldus PageMaker 4.0 . . 35. ★Inline Design ... 30 day MBG 5870 Bomber 1.3 (includes headphones) 32. 7622 Darwin's Dilemma 1.0. . . . . . . . . . 32.



Witch. Words for grades 1-6 included.

Requires HyperCard ..... \$31.

	Learning Company 30 day MBG
2670	Reader Rabbit 2.2 (CP) (ages 4-7). \$30.
5453	Reader Rabbit 2.2 (CP) (ages 4-7). \$30. Talking Math Rabbit 2.0 (ages 4-7). 30.
7	Leister Productions 30 day MBG
	Reunion 2.0 95.
,	Microsoft 30 day MBG
2868	Flight Simulator 1.02 (CP) 32.
2000	Mysterium Tremendum 30 day MBG
5841	Moriarity Revenge (CP)
3041	Nordic Software 30 day MBG
9259	Turbo Math Facts 1.1 26.
9250	Word Ouget 1 0
0200	Word Quest 1.0
8257	Preschool Pack 1.0
2222	Passport Designs
8253	TRAX 2.0
9442	AudioTRAX
	Desktop Music Creativity Kit 189.
3117	
8250	Encore 1.3.1
8880	Alchemy
7	Penton Overseas 30 day MBG
	VocabuLearn/ce Levels I & II
	(French, Italian, Spanish, German,
	Russian, Hebrew, & Japanese). ea. 35.
	Personal Training Sys 60 day MBG
	We carry over 60 learning levels from
	beginner to advanced for Quark XPress,
	Excel, Persuasion, FileMaker II/Pro,
	PageMaker, Illustrator, FreeHand, Word,
	HyperCard, and the Mac ea. 52.
-11	Postcraft
7601	Citadel & Citadel Secrets Hint Book. 31.
	Premier Technology
	Strategic Conquest or NetTrek . ea. 34.
	Sierra On-Line
3397	Leisure Suit Larry (CP)
	Sir-Tech Software
8228	Wizardry II: Knight of Diamonds (CP) 29.
	Software Toolworks
4619	Mavis Beacon Typing 1.3 (CP) 32.
4588	Life & Death (CP)
	Spectrum Holobyte 30 day MBG
	Tetris 1.1 or Welltris 1.1 ea. 22.
8180	Faces
2450	Falcon 2.2
3439	Falcon 2.2
0000	Correct IV (CO) (chanc)
2328	Sargon IV (CP) (chess) 28.
2004	Strategic Studies 30 day MBG
8084	Halls of Montezuma
8085	Panzer Battles
	StudyWare
3,515	ACT, GMAT, GRE, or SAT Prep . ea. 29.
8098	LSAT Prep for the Mac 35.
7	Terrace Software 30 day MBG
	Mum's The Word (gardening) 79.
	Toyogo 30 day MBG
7836	Go Junior
7624	Nemesis Go Master 4.7 41.
7623	Nemesis Go Master Deluxe 4.7 85.
	Voyager 30 day MBG



Beagle Bros. ... 30 day MBG 7691 Flash 1.1—Start flashing your co-workers today! The friendliest way to transfer files over Apple Talk—without a File Server. Transfer files from the Finder or within any application \$125.

### **NETWORKS & COMMUNICATIONS**

	Abaton 30 day MBG
6266	
	Applied Engineering
8365	
	DataLink/Mac or Mac Portable ea. 209.
8938	DataLink LC
8362	QuadraLink 209.
*	Beagle Bros 30 day MBG
7691	Flash 1.1
7	CE Software 60 day MBG
5173	QuickMail 2.2.3 (10 user) 315.
	CompuServe
1676	Macintosh Membership Kit 1.03 23.
1673	CompuServe Navigator 3.0 49.
1674	Membership Kit/Navigator Bundle . 68.



### DataViz ... 60 day MBG

1823 MacLink Plus/PC 5.0—Transfer & translate documents between Mac & PC. Over 250 spreadsheet, word, database, & graphic translators. Both contain DOS Mounter software . \$129. 4842 MacLink Plus/Translators 5.0 (Qtv. 250). 109.

280U

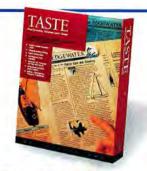
MMC

MacConnection ®

★XOR ... 30 day MBG

Amanda Stories (vol. 1, 2 or 3) . ea. 18.

### For delivery that



### DeltaPoint ... 60 day MBG

8967 Taste 1.0-A fast and easy-to-use word processor with page layout capability, a fully integrated draw layer, an internal address book with built-in mail merge, and full Macintosh color support..... \$84.

		8762 Travel Modem 189.
7	DataViz 60 day MBG	8349 Maxfax 289.
	MacLink Plus/PC 5.0 129.	8709 2400M Plus 219.
4842	MacLink Plus/Translators 5.0 109.	8738 9600M Plus 599.
	Dayna Communications	8990 Ultima 9600 689.
8720	DaynaTALK (5 Pak) 379.	
8721	DaynaTALK (10 Pak)	
	EtherPrint	A & & @
0,10	Dove Computer 60 day MBG	
	DoveFax Desktop 1.1.1 295.	
	Dow Jones 30 day MBG	
5295	News/Retrieval Membership Package 24.	
0077	EveryWare	ENECTIVED.
	AllShare 1.0 139.	ILLIGUAKU.
	Farallon Computing 30 day MBG	No. 10 COST 100 COST
5707	Timbuktu 3.1 95.	
4866	Throught and the control of the cont	The state of the s
6371	Timbuktu/Remote Access Pack 845.	Talina I
8707	Liaison 3.0	
6273	PhoneNET StarConnector 10-Pack. 129.	ASD Software 30 day MBG
4869	PhoneNET Connector 10-Pk (DIN-8) 198.	
2206	PhoneNET StarController 300 825.	MaccessCard Reader combined with FileGuard 2.5
6687	PhoneNET StarController-EN 1589.	secures your Mac against unauthorized users.
6766	MediaTracks 189.	7085 FileGuard Extended 2.5.2 (1 user) \$139.
6768		9440 MaccessCard Reader (regs. FileGuard) 299.
	Freesoft 60 day MBG	0400 M. C. UTI C. LU D. # 200
6115	White Knight 11	9439 MaccessCard/FileGuard (1) Bundle 399.
7	Global Village 30 day MBG	
8946	TelePort A300	★Shiva 30 day MBG
8945	TelePort/FAX 185.	3444 NetSerial 3.3 275.
	Hayes	4347 NetBridge 409.
2300	Smartcom II 3.2 84.	4942 TeleBridge 409.
2307	Smartmodem 2400 349.	3443 NetModem V2400 3.3
5991	V9600 Baud Modem 689.	6917 NetModem V.32 (V.42 & V.42 bis). 1169.
	Insignia Solutions	6519 EtherGate
7557	Access PC 1.0 62.	8189 FastPath IV
7058	SoftPC-AT/EGA Module 125.	Sitka/TOPS
4089	SoftPC 1.3 245.	4188 TOPS Teleconnector (DIN8) 23.
	Intel Corporation	3720 TOPS Flashcard
5119	2400EX Modem 179.	6264 TOPS Networking Bundle 3.0 187.
6420	2400EX MNP Modem	★Software Ventures 30 day MBG
8193	9600EX Modem (w/QuickLink II). 549.	3455 MicroPhone II 3.0 215.
3.00	International Business Software	★Solutions, Inc 60 day MBG
8581	DataClub (3 user) 199. 8580 (10 user) 539.	6720 FAXGATE Plus 1.1.2 239.
	Kennect Tech 30 day MBG	★Synergy 30 day MBG
5631	Rapport 1.3.4	6618 VersaTerm 4.5
7588	Drive 360 (51/4")	6619 VersaTerm-PRO 3.5
7590	Drive 1200 (51/4")	★Traveling Software 60 day MBG
5632	Drive 2.4 (31/2") (incl. FastBack II) . 325.	3729 LapLink Mac III Connectivity Pac 93.
0002	DITYG 2.4 (0.12 ) (IIICI. F astback II) . 323.	5725 LapLink Mac III Connectivity Fac 95.

-	Microcom 30 day MBG
	CarbonCopy Mac (Single) \$117
7465	CarbonCopy Mac (Twin Pack) 169
8027	MacModem V.32 689
	Microsoft 30 day MBG
9444	Microsoft Mail 3.0 (1-5 user) 269
	Nuvotech 60 day MBG
3000	TurboNet ST (DIN-8) 30
6751	TurboNet ST (12-Pack) 279
6272	NuvoLink SC
*	Orchid Technology 30 day MBG
	OrchidFAX Modem 1.06 429
	Practical Peripherals 30 day MBG
	2400 Baud External Modem 179
	2400 V.42 bis Modem 209
	PM9600SA Modem 1.26 489
	Mac Communications Pack 225
*	Preferred Publishers 30 day MBG
8943	DoubleTalk (1 Pak) 79. 8942 (2 Pak) 129
*	Prometheus 30 day MBG
8350	2400 Mini for Mac 149
8348	24/96 Minifax
	Travel Modem 189
8349	Maxfax
	2400M Plus 219
8738	
8990	Ultima 9600 689
of the latest services	NAME OF TAXABLE PARTY O



### ASD Software ... 30 day MBG MaccessCard Reader combined with FileGuard 2.5 secures your Mac against unauthorized users. 7085 FileGuard Extended 2.5.2 (1 user) . . . . \$139.

-	Shiva 30 day MBG
3444	NetSerial 3.3
4347	NetBridge 409
4942	TeleBridge 409
3443	NetModem V2400 3.3 339
6917	NetModem V.32 (V.42 & V.42 bis). 1169
6519	
8189	FastPath IV
	Sitka/TOPS
4188	TOPS Teleconnector (DIN8) 23
3720	TOPS Flashcard
6264	TOPS Networking Bundle 3.0 187
	Software Ventures 30 day MBG
3455	MicroPhone II 3.0 215
-	Solutions, Inc 60 day MBG
6720	FAXGATE Plus 1.1.2
	Synergy 30 day MBG
6618	VersaTerm 4.5
6619	VersaTerm-PRO 3.5 173
	Traveling Software 60 day MBG
	Landial Man III Connectivity Dec 00

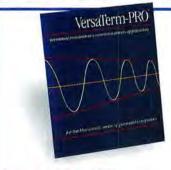


### MECA ... 60 day MBG

2796 Managing Your Money 4.0-All new interface with version 4.0 makes Managing Your Money even easier! Comes complete with CheckFree electronic billpaying options as well as multiple small business features . . . . . . . . . . . . . \$99.

### INPUT/OUTPUT

*	Abaton 30 day MBG
7432	Scan 300/GS (regs. Scan Kit) 999.
	Includes free ProPoint (\$79 value).
	American Power
5895	UPS 110SE 209.
6686	
2.72.7	Caere
8124	Typist 479.
4476	OmniPage 2.12 495.
6660	OmniSpell 1.0 69.
6658	OmniDraft 1.0 69.
0000	Chinon
8814	DS-3000 Scanner w/Dig. Darkroom 699.
	DS-3000 Scanner w/OmniPage 1069.
	Computer Friends
8271	ColorSnap 32+ 649.
	CoStar 30 day MBG
	LabelWriter
6067	LabelWriter Labels 9.
7452	LabelWriter Labels (12-Pak) 49.
	Datadesk 30 day MBG
	Switchboard (modular keyboard) . 159.
	The state of the s



### Synergy ... 30 day MBG

6619 VersaTerm-PRO 3.5—Communications program including Apple Communication Toolbox support & new protocol tools (TCP/IP, Telnet, FTP, LAT, ADSP, Serial Modem). Supports transfer for XModem, YModem, & Kermit protocols \$173.



### "President, Owner, Typist, and Janitor"

Dear MacConnection,

As the President, Owner, Typist, and Janitor of Extraordinary Word Processing, let me thank you from the bottom of my heart. You have saved my life on a few occasions. My budget is a shoestring. I buy products as the need arises. I say I can do the job, order the software from you, and pray I can

figure it out quickly. Recently, I got a call for a database job so I ordered one from MacConnection. The next morning, the doorbell rang. I assumed it was a customer, but it was my order! You promise a 24-hour turnaround, but if anything had gone wrong that day, I would have been doomed. Thanks,

MacConnection, for letting me fly by the seat of my pants.

Kathleen Tau Son

Extraordinary Word Processing

Boston, MA

### MacConnection®

MacConnection, 14 Mill Street, Marlow, NH 03456 603/446-7711 FAX 603/446-7791

Just for the record, all the ads in this series feature photographs of real live MacConnection customers and the real live letters they wrote us. Really!

### We ship 'til 3:15 a.m.!



### Total Systems ... 30 day MBG

	SuperMac Tech.
7451	Dataframe XP 200 Hard Drive 1399.
5451	Dataframe XP 330 Hard Drive 2249.
7	Total Systems 30 day MBG
	32-bit RAM Exp. Module call
	68882 Math Coprocessors call

### **ACCESSORIES**

	Apple Computer
7748	Personal LaserWriter Toner Cart 89.
	LaserWriter II Toner Cartridge 105.
	Avery 60 day MBG
4811	Transparencies 81/2" x 11" (Qty. 50) 22.
4807	Laser Labels 1" x 25/8" (Qty. 3000) . 24.
5392	Disk Labels 31/2"-Laser (Qty. 630) 29.
7	Basic Needs 60 day MBG
	Nylon Dust Covers 10. to 13.
7413	Mac Ilcx/ci Monitor Stand 48.
	Computer Coverup 60 day MBG
1723	ImageWriter II Cover 8.
1725	Mac SE Ext. Keyboard Cover set 10.
	CoStar 30 day MBG
7453	The Organizer Jr 82.
	The Organizer 199



Innovative Data Design

	Curtis Manufacturing
8046	MVP Mouse
*	Goldstein & Blair 30 day MBG
8198	"What Do I Do Now" Book 9.
2267	The Macintosh Bible (3rd Ed.) 19.
	rI/O Design 30 day MBG
8812	Ultimate Classic Carrying Case 64.
	Ultimate SE/Ext. Carrying Case 79.
7	Kensington 30 day MBG
	Full line available. Partial listing.
2559	Apple Security Kit
9303	Keyboard Shelf
6763	SE Radiation/Anti-Glare Filter 52.
2566	System Saver Mac (platinum) 63.
5064	Apple Color Monitor Polarizing Filter 63.
9301	PassProof
7	MacConnection 60 day MBG
	Solid Oak Disk Case (holds 90 disks) 32.
8795	Switch Box (2 Pos.) 32. 8796 (4 Pos.) 49.
7	Mobius Technologies 60 day MBG
4470	Fanny Mac QT (Platinum) 55.
7	Moustrak 60 day MBG
	Moustrak Pad (standard 7" x 9") 8.
	Moustrak Pad (large 9" x 11") 9.
2693	Moustrak Pad L/F (large 9" x 11") 10.



MacConnection ... 2 year warranty SIMMs—Crank your system's memory to the max with our very own, very reliable 80ns SIMMs. Includes complete instruction booklet & installation video (VHS or 8mm). See line listing for specifics.

### Ribbons

3255	ImageWriter II Hibbon Black 4.
9362	ImageWriter II Ribbon Black (12 Pack) 29.
3261	ImageWriter II Ribbon Multi-4-Color , 9.
7	Sopris Softworks 60 day MBG
	Ripstop Nylon Dust Covers call.
4014	High Trek Mac SE & Ext. Kybd. Case 69.
7	Targus 60 day MBG
3617	Mac Plus/SE Carry Case 55.
4015	Mac SE & Ext. Kybd. Carry Case 69.
1	Tripp Lite 30 day MBG
6200	Isobar 6 (surge suppressor, 6 outlets) 59.

### STORAGE MEDIA

,	Sony 60 day MBG	
3297	31/2" DS/DD Disks (10)	12
6148	31/2" DS/DD Disks 3 Pak (30)	29
	31/2" HD Disks 1.44 Meg (10)	
6375	31/2" HD Disks 3 Pak (30)	49
	QD2040 Tape Cartridge	
7	MacConnection 60 day MBG	
6592	44 Meg Removable Cartridge	75



MegaGraphics

19" Rival Monochrome System for SE, SE/30 or II— Macworld Editors' Choice in large screens. Also includes coupon book with over \$3000 in savings on special 3rd party products. ea. \$1199.

*	MAXELL 60 day MBG	
2792	31/2" DS/DD Disks (10)	13
2793	31/2" HD Disks 1.44 Meg (10)	21
*	r3M 60 day MBG	
3943	DC2000 40 Mb Data Cartridge	19

### **OUR POLICY**

- We accept VISA and MASTERCARD.
- No surcharge added for credit card orders.
- Your card is not charged until we ship.
- If we must ship a partial order, we never charge freight on the shipment(s) that complete the order (in the U.S.).
- No sales tax, except Ohio residents (please add applicable tax).
- All U.S. shipments insured; no additional charge.
- APO/FPO orders shipped First Class Mail.
- International orders Ü.S. \$250 minimum.
   Upon receipt and approval, personal and company checks clear the same day for immediate shipment of your order.
- Corporate P.O.s accepted subject to credit approval.
- COD max. \$1000. Cash or certified check.
- 120 day limited warranty on all products. Defective software replaced immediately. Defective hardware repaired or replaced at our discretion. All items subject to availability. Prices and promotions subject to change without notice.
- Our order lines are now open 24 hours a day Monday through Friday, and Saturday 9:00 AM to 5:30 PM EST.
   You can call our business offices at 603/446-7711 Monday through Friday 9:00 AM to 5:30 PM EST.

### SHIPPING

Continental US: Barring events beyond our control, all credit card orders phoned in weekdays by 3:15 AM EST will ship Airborne Express for delivery the next business day. Which means same day delivery for orders placed between midnight and 3:15 AM EST. (Some orders may ship by UPS Ground for next day delivery). Saturday delivery available to many areas upon request. Some areas require an additional day delivery. The total freight charge on any order placed with MacConnection is only \$3.

Hawaii, Alaska, Canada, Puerto Rico and U.S. Virgin Islands: Call 800/334-4444 for information on shipping and charges.

**All other areas:** Call 603/446-7711 or FAX 603/446-7791 for information.

### is unsurpassed.

*	DayStar Digital 30 day MBG
	Listed items do not include coprocessor.
8556	FastCache for Mac Ilci \$279.
8586	40 MHz PowerCache Ilci 949.
8585	50 MHz PowerCache Ilci 1689.
8583	SCSI PowerCard 1095.
	25 MHz PowerCard 030 (II, IIx, IIcx) ea. 1095.
	40 MHz PowerCard 030 (II,IIx,IIcx) ea. 1389.
	50 MHz PowerCard 030 (II, IIx, IIcx) ea. 1895.
	GDT Softworks
6256	PrintLink Collection 4.0
6151	JetLink Express 2.0 89.
8960	ParaLink Express 99.
	Hewlett-Packard
6514	HP DeskWriter Printer 759.
6754	HP LaserJet III (with toner) 1699.
9355	HP LaserJet IIP (with AppleTalk,
	1 Meg & PostScript Cartridge) 1799.
*	Kensington 30 day MBG
	Turbo Mouse 3.0 (Plus or ADB) ea. 107.
	Kodak
6730	DICONIX M150 Plus Printer 399.
7	Kraft Systems 60 day MBG
7519	KM30 ADB Joystick 42.



### Logitech ... 30 day MBG

5082 ScanMan Model 32 Gray-Scale Scanner— Scan in any type of image you need to enhance your Macintosh document. 100-400 dpi with ergonomic case and gray-scale editing makes scanning a breeze.....\$299.

### ★Logitech ... 30 day MBG

5082 ScanMan Model 32 G-Scale Scanner 299. Magnavox

14" Color Monitor with Micron Xceed for SE/30 (640 x 480) . . . special 849.

MegaGraphics

16" 8-bit System for SE/30 or II ea. 2595.
7841 16" 24-bit Color System for Mac II 4895.
19" Rival Sys. SE, SE/30, or II ea. 1199.
19" 8-bit System for SE/30 or II ea. 4295.
7840 19" 24-bit Color System for Mac II 6395.
19" G/S System for SE/30 or II ea. 1895.

★Micron ... 30 day MBG

7149 Xceed Ilci-128 Cache Card. . . . . 239. 6680 Xceed for SE/30 (640 x 480) . . . . 329. ★MicroSpeed ... 30 day MBG

Little Mouse or Little Mouse Plus. ea. 74.

★ Nutmeg Systems ... 30 day MBG

r Nutmeg Systems ... 30 day MBG 15" Monitor: SE, SE/30, II or IIsi ea. 599. 19" Monitor: SE, SE/30, II or IIsi ea. 995.



### Sophisticated Circuits ... 30 day MBG

8009 PowerKey—Turns your Mac & peripherals on from the keyboard & off with "Shut Down." Includes software for scheduling on/off & macro events for unattended operation. Four filtered outlets provide surge & overload protection \$65.

19" Monitor: G-Scale SE/30, II, IIsi ea. 1295. 20" Color System: SE/30, II, IIsi ea. 2595. ★Orange Micro ... 30 day MBG 3036 Grappler 2.0 (9 pin) . . . . . . . . . . . . 87.

Business Color System: SE/30 or II 2995.

\*Sophisticated Circuits ... 30 day MBG
8009 PowerKey 65. 8008 Wake-Up Cable 32.

TheComplete PC

8653 Galileo I Video Board (for Mac SE) 449. 9282 Galileo Video (for Mac Plus) . . . . 449. 8989 High Speed SCSI for Mercury 16+ 189.



### Nutmeg Systems ... 30 day MBG

19" Gray-Scale Display for SE/30, Il or Ilsi—Delivers a flicker-free 72 dpi image at 78 MHz with 256 shades of gray. Includes video card, tilt/swivel base and anti-glare screen. Please see line listings for additional Nutmeg products... ea. \$1295.

89.
19.
99.
79.
75.
99.
-

### **MEMORY & DRIVES**

	SIMMs 2 year warranty Includes free instructional video tape.
1107	1 Meg SIMMs (80ns) 57.
8316	
9437	2 Meg SIMM for Ilsi & LC call
	1 Meg SIMMs for Ilfx (set of 4) 239.
	Applied Engineering
8361	1.44 Meg High Density Drive 229.
8369	MacRam Portable with 1 Mb 399.
	MacRam Classic with 0, 1, or 3 Mb. call



### Cutting Edge ... 30 day MBG

5456 45 Meg Removable Drive—Offers the convenience of removable media with the reliability of Winchester technology. Features the popular Syquest mechanism & includes a cartridge. \$599. 5736 45 Meg Removable Cartridge. 79.

★Cutting Edge ... 30 day MBG

3989 800K External Disk Drive . . . . . . 149. 20 + Meg Hard Drive ..... 5133 45 + Meg Hard Drive . . . . . . . . . 439. 3991 5275 60 + Meg Hard Drive . . . . . . . . . 489. 5276 80 + Meg Hard Drive ...... 5456 45 Meg Removable Drive . . . . . . 599. 5736 45 Meg Removable Cartridge.... 79. Dayna Communications 8723 DaynaFILE 360k Drive . . . . . . . . . 449. DaynaFILE 1.2 51/4" Drive . . . . . 449. DaynaFILE 1.44 Mb . . . . . . . 629. 8927 DaynaFILE Dual 360k & 1.44 Mb . 739 ★Dove Computer ... 60 day MBG MaraThon 030 Upgrades ... ea. 529. 8186

 8186
 MacSnap 524XE
 199.

 8187
 MacSnap 524XS (w/SCSI Port)
 249.

 8649
 MacSnap 596XE (4 Mb)
 299.

 8652
 MacSnap 596XS (4 Mb w/SCSI Port)
 365.

 Peripheral Land, Inc. (PLI)

 8335
 PLI TurboFloppy 1.4
 309.

 8333
 PLI Sony 40 Turbo Ext. Drive
 499.

8333 PLI Sony 40 Turbo Ext. Drive. 499. 8327 PLI Infinity 40 Turbo 749. 8331 PLI 80 Meg Ext. Drive 739. 8330 PLI 105 Meg Ext. Drive 779.

40 Meg & 80 Meg Internal Drives for Mac SE, SE/30, IIx, Ilfx, Ilci & Ilcx . . call

### NEW ON THE MENU **DUICK CLICKS**

separately as a MIDI file.

A generous help stack is provided to answer your questions. Although the layout of the stack is fairly straightforward and the contents comprehensive, a small manual or printable TeachText document explaining the basics would be welcome.

The use of HyperCard, MIDIplay, a MIDI interface, and a multitimbralsynthesizer module is a real boon to anyone interested in creating multimedia presentations. There are numerous advantages to using MIDI in this way, including the relatively small amount of storage space required for a MIDI file (versus a digital sound file); the ability to control external devices such as lights, film projectors, and musical instruments; and the availability of prerecorded MIDI files for those without the time or inspiration to compose their own melodies.

Multimedia takes on a whole new sound dimension with MIDIplay, an excellent tool that anyone in the MIDI realm can use to bring audio impact to their presentations.

Opcode Systems, 3641 Haven, Suite A, Menlo Park, CA 94025; (415) 369-8131. Version L.O. \$59.95.

Christopher Breen



### PlayMaker Football 1111/2

If you're a fan of both football and computer games, you won't find a better combination of the two than PlayMaker Football. It's a superb game that's actually more coaching simulation than play simulation.

PlayMaker Football's monochrome aerial view shows a football field on which animated figures run offensive and defensive plays. The animation is reasonably good, and the game features authentic sounds. An announcer function calls up a dialog box that describes plays run by both teams. These announcements can be saved to disk as a game transcript.

PlayMaker Football works on several levels. At the most basic level, you can select two teams from the ones that come with the package. Generally, you control one team and let the computer control the other. Because the program includes simple AI routines, the computer knows what plays work and reacts accordingly. Beating the computer can be anything but a snap, and you're not restricted to simply watching the plays happen. One player (a quarterback, runner, or middle linebacker) can be controlled by the mouse. As your skills improve, you can add new plays or refine existing ones.

The highest level of play involves building your own team. Each player's attributes can be set individually. You won't be able to create a team of superplayers, however, because each team is limited to a certain number of points. Each level of skill and talent you select consumes points. You can build a good defense at the expense of your offense or emphasize the running game over the passing game, but you can't have it all.

After you've built a team, it's time to start building its playbook. It's not enough to be a good armchair coach in order to build a good playbook. You need to know how to run traps, draws, and screens if you expect to create good plays. The manual, two sample playbooks, and on-disk examples can help make you an expert.

Just as in real training camp, building plays means diagramming them on a chalkboard. You can tell each player where to move and what to do. You can set your quarterback, for example, to drop back, pump-fake, roll left, and toss to a halfback, who has faked a pass block and then broken out to the flat. After you save plays, it's best to take them to the practice field and refine them. Once the plays have been set, you use PlayMaker Football's Al features to specify when and how to use them. If you know, for example, that a certain team always runs on first down, be sure a run defense is always called. The AI features are especially crucial in leaguetype play, where the games are played without human involvement.

Because PlayMaker Football lets you have both teams use password-locked, user-specified playbooks to play, several electronic-football leagues have evolved. There are active leagues on CompuServe's MAUG area (GO MacFun, section 10) as well as on America OnLine.

The program is incompatible with the IIci and later Macs, but Brøderbund will supply a fix if you send in the master disk. The game is also heavily copy-protected, requiring you to insert a key disk each time you start up.

These minor annoyances aside, PlayMaker Football is simply the best football game you can get today on any microcomputer.

Brøderbund Software, 17 Paul Drive, San Rafael, CA 94903; (415) 492-3500. Version 1.0, \$79.95.

- Steven Bobker



### Stratego: The Computer Game 1111/2

Accolade's Stratego: The Computer Game is not just another weak rendition of the best-selling board game. In fact, Accolade's version improves significantly on the original board game in several ways. For one, although the Stratego computer opponent may seem a bit predictable compared with the human variety, at least it's always ready and willing to play.

Just as in the classic Milton Bradley test of military cunning, Stratego's objective is simple - capture the enemy's flag before the enemy captures yours. Each side deploys an army of 32 officers (valued according to their rank), 1 spy, 6 bombs, and 1 flag. For quick setup, you can choose from a library of 13 preconfigured battlefield formations or create your own and save them to disk.

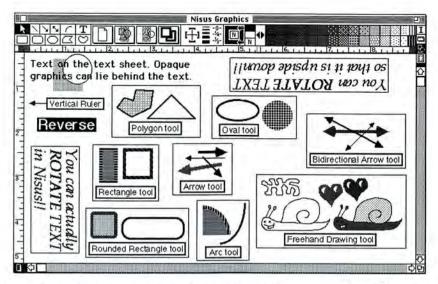
A typical game takes about ten minutes. You fight battles, defuse bombs, and try to protect your spy. Battles are sparked when two opposing pieces try to occupy the same square on the board. Victory goes to the higher-ranking piece, and ties end in mutual defeat. Because the enemy's strength is hidden until revealed in battle, caution and concentration are rewarded.

The computer opponent has five levels of ability, but even the highest level is somewhat predictable. Stratego more than compensates for this in rule variations. There's Silent Defense, in which only the attacker reveals rank. Playing under Aggressor Advantage rules, the attacker is always the winner in battles against equalranking defenders. And Rescue returns one captured piece to the field when a player reaches the enemy's back row.

Besides opponent predictability, Stratego's only other shortcoming is the copyprotection code wheel you must consult each time you launch the application. But these are minor drawbacks of a welldesigned game. Stratego offers three different game boards and piece sets as well as impressive digitized sound effects and music. Well tailored to the Mac, it's MultiFinder-friendly and looks great in 8-bit color and monochrome modes.

Accolade, Inc., 550S. Winchester Blvd., Suite 200, San Jose, CA 95128; (800) 245-7744 or (408) 985-1700. Version: 1.0.

— Owen W. Linzmayer 🖫



### If a picture is worth a thousand words, then why not use a word processor that processes pictures too?

Nisus® lets you communicate the way the Macintosh works—with words and graphics

Most people aren't really interested in whether a program is a word processor, a graphics program, or a page layout program. All they really want to do is communicate.

Sometimes, something as simple as a

electronic

symbols or

around your

callout box

note with an arrow attached is all you need to make your point.

Other times, a little grey background behind some text seems more appropriate. The tools you need to com-

municate come built into Nisus, or you can place a PICT graphic like the features list on the right.

You can "Place" any page of a Nisus file containing text and graphics into another Nisus file where it becomes a picture called a "Placed Page Graphic." Double clicking this "Placed Page Graphic" will open the original file for editing. Graphics can be drawn or pasted to three different layers: the text layer, behind the text, and in front of the text, giving you total control.

Nisus lets you rotate text, which is very important if you are designing a self-mailer that folds into three panels. Nisus also enables you to print two pages up-pamphlet style. So, for example, suppose you want to print two pages on a single  $8\frac{1}{2}$  by 11-inch sheet of paper turned sideways. You can do it with Nisus by a simple selection. Perhaps more important, however, is that this same command will collate your pages-in an 8 page document, for example, page 1 and

CIRCUIT DIAGRAMS IN A NISUS® DOCUMENT This is a Laser TechPonts' diagram. As you can see, you can put a com-plicated diagram directly into your document. In this case, the diagram was drawn using specialized "draw' circuit fonts, along with the Scientific text fonts. These special fonts a you to design a schematic quie a draw or paint program, or a word processor with integrated graphics, such a b, the amazing word processor from Paragon Concepts, Inc. Nisus lets vou SCIENTIFIC EQUATIONS WITHIN A NISUS® DOCUMENT draw attention to This is a section of Laser TechFonts' within a Nisus document #14-22'(x2-x)3. The first part of the equation,  $^{10}$ GeV, an example of the Fraction font, which allows a fraction to be typed on one line of text. The exponent 2 in the numerator is Fraction superscripted. The second part of the equation,  $(x^2-x)^3$ , is an example of the Scientific font, with the exponents 2 and 3 in the scientific notation. Text wraps  $\hat{\Sigma} \times_i \vee_{i-\frac{1}{2}} \hat{\Sigma} \times_i \hat{\Sigma} \vee_i$ You can type equations into Nesus using Laser TechFonts, and then put boxes around them These boxes, drawn using the Nisus graphics palette, call attention to examples and formuautomatically. as This feature is perfect for writing manu-FIGURE 1 scripts, exame and study guides

> page 8 will lie next to each other!

> If you're new to the Macintosh word processing market, you probably want a word processor that is easy to use. If you've been around for a while, you undoubtedly want a powerful word processor. Chances are you have tried either Mac-Write or Microsoft Word. 4.0. One is easy to use, the other offers power. Both, however, have severe limitations which is why we developed Nisus in the first place.

Nisus has a built-in word processing language which does for word processing what built-in languages do for databases. For example, the language allows

you to develop routines to index all proper names, a method to find and correct all double words, periods, and extra spaces, or index every word in a document except those you specifically want to exclude. You choose the features.

Discover why Nisus is shipped with every Macintosh in Korea, why MacUser U.K. named Nisus "1989 Best Word Processor," and why Macworld Australia uses Nisus as its word processor of choice.

This two column format above is actually a separate Nisus file placed into the master file. This gives you total control over how you layout a Nisus document.

Nisus Feature Comparisons	NISUS 3.0	Word 4.0	WriteNow	MacWrite II
Built-in word processing language (GREP & macros)				
Noncontiguous text selection		-		
Unlimited column formats			H	
Find and replace or index				
Find any font, style, SiZe, or color				-
Place text or graphic linked to parent text or graphic file	•			
Find and replace in unopened files				
Cross reference text				
125,000+ user definable key commands				
"Super Style sheets"				
Automatic File Comparison				
10 editable clipboards				
Mark text as electronic book mark				
Built-in Graphics				
Rotate text and graphics				
Unlimited undos back to "open file"		1.7	*	
Reads and Writes Microsoft Word Files				
Vertical Ruler				

### Free Brochure

Call today for your free complete brochure describing Nisus in detail. And while you're at it, ask yourself how many more words this ad-created in Nisuswould have taken without the pictures.

> (800) 922-2993 Extension 900



Nisus is a registered trademark of Paragon Concepts, Inc. Other tradenames are trademarks of their respective compa





## Two New Apple In the second of the second o

The conventional wisdom was clear:
Apple made nice peripherals that cost too much. But Apple's newest high-quality, low-cost printers have just stood the conventional wisdom on its ear.



BY
HENRY BORTMAN
AND
JON ZILBER



hen Apple launched the Classic, LC, and IIsi last October, the buying public responded with a resounding cheer. Still, there was a note of quiet while hundreds of thousands of Macintosh users waited for the other shoe to drop: Budget-minded buyers were still looking for budget-

conscious printers. The affordable but antiquated 72-dpi ImageWriter II was no match for the sleek new Mac Classic, and most laser printers still carried price tags well in excess of the costs of the new CPUs.

We're still waiting to hear the sound of one hand clapping, but we now know the sound of one shoe dropping: Whooossshhhh. Whirrrrrrr. That's what you'll hear when you print from either of Apple's two new low-priced printers: the \$599, 360-dpi thermal inkjet StyleWriter or the \$1,299, 300-dpi Personal LaserWriter LS.

Although the two printers use radically different printing technologies, they have much in common: They're the first printers to ship with TrueType, Apple's new font strategy, which offers flexible, scalable, high-quality, and easy-to-use type. They're both first-time implementations (for Apple) of some impressive new technologies. They're both quiet, nicely designed, and simple to operate. And they're both priced aggressively to compete with popular third-party printers from companies such as Hewlett-Packard and GCC.

PHOTOGRAPHY: STEVE UNDERWOOD

### **New Apple Printers**



Figure 1: The many faces of Apple's StyleWriter. Left to right: the printer solo, for minimum footprint; with the bundled docking sheet feeder; and with the sheet feeder's output tray extended.

Wait a minute! Did someone say TrueType? Isn't that part of the long-awaited System 7.0? Yes, but it's now available as an INIT for System 6.0.7 as well (see the "Truth About TrueType" sidebar).

### The Elements of StyleWriter

The StyleWriter is unlike any other Apple printer you've ever seen, technologically and designwise. For starters, it sits vertically instead of horizontally, meaning that it takes up very little desk space. It's also what adults and marketing types call modular but what kids of all ages know as a transformer: Various pieces snap on and swing out, depending on what you need (see Figure 1).

The basic printing unit — about the size of a tissue box turned on its side — can be used by itself for maximum transportability, although its nonfolding base makes it impossible to fit into a standard briefcase. An attachable sheet feeder adds convenience if you're going to do any

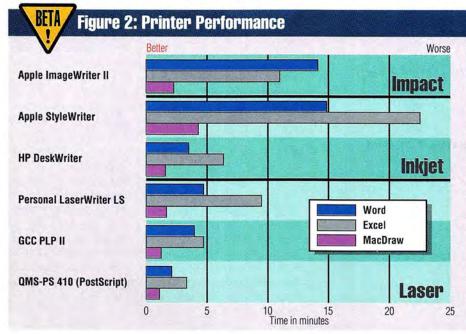
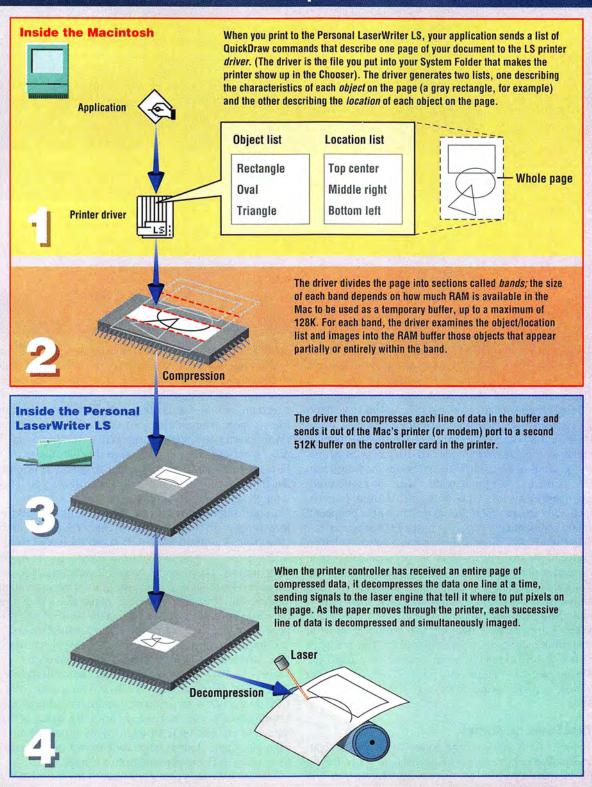


Figure 2: Because Apple's new printers are targeted at budget-minded buyers, MacUser Labs chose to test them on a Mac Classic. **Because Classic owners** are unlikely to use the sophisticated drawing and page-layout applications we use in our standard printer tests, we developed custom tests. We created three simple bread-and-butter test documents: a five-page Word document containing four fonts, a two-page Excel spreadsheet containing four fonts, and a simple MacDraw Il drawing containing only a few words of text. All the tests used TrueType fonts only.

### **How It Works: Personal LaserWriter LS Compression**



### **New Apple Printers**

	Pros	Cons	Ideal Users
Dot-matrix printer	<ul> <li>About \$400 (street price).</li> <li>Wide-carriage printing.</li> <li>Networkable (ImageWriter).</li> <li>Gan use color ribbon.</li> <li>Can print multipart forms.</li> <li>Can use fanfold paper.</li> </ul>	Usually low-resolution. Noisy. Slow.	<ul> <li>Dot-matrix printers will likely be limited to people with very low-end Macs who can't afford the slow print times of Apple's StyleWrit or the slightly higher cost of HP's DeskWriter. Also, people who need to print multipart forms or want inexpensive, low-quality color printing will need dot-matrix printers.</li> </ul>
Inkjet printer	<ul> <li>Less than \$700 (street price).</li> <li>Quiet.</li> <li>Often 300 dpi or better.</li> </ul>	Print may smudge. Very slow (StyleWriter). No color.	<ul> <li>Inkjet printers are ideal for anyone who wants superior resolution but doesn't want to pay a premium.</li> </ul>
Laser printer	Fastest. Networkable. 300 dpi or better. Nonsmudgeable output. May include PostScript. Many models to choose from. Quiet. Upgrade and expansion options.	Most expensive.     No inexpensive color.     Expensive consumables.	<ul> <li>Laser printers may someday become the printers of choice for nearly everyone. The stumbling block continues to be their higher price, For high-volume business use or for desktop publishing, a laser printer is clearly the best choice.</li> </ul>

kind of heavy-duty printing. There's also a paper-output tray that swings out of the sheet feeder. Ink cartridges cost \$22.99 apiece and should last for about 500 pages.

The printing mechanism, manufactured by Canon, is a modified version of that company's thermal inkjet technology. The Canon BJ-10e Bubble Jet Printer, designed for use with PCs, has been on the market for several months. Similar to the StyleWriter, the BJ-10e costs \$100 less (\$499), but its optional sheet feeder brings the list price to \$589. To use Canon's printer with a Mac, you need a third-party interface such as GDT Software's JetLink Express, which adds an extra \$249. (Imagine: an Apple peripheral product competitively priced against a PC peripheral!)

The StyleWriter's output quality is top-notch. Although its price might imply ImageWriter-like output (144 dpi in Best mode), the StyleWriter's resolution has been cranked up to 360 dpi, higher than that of most laser printers. Text documents generally look similar to their laser-printed counterparts. (In our benchmark tests, we occasionally spotted a stray pixel or two, but you often see these on output from plain-paper laser printers too.) The quality of text is aided by the inclusion of Apple's new TrueType software (see the "Truth About TrueType" sidebar). In addition, graphics output is far superior to ImageWriter output.

### Here Comes the Smudge

If you're thinking there's got to be a catch, you're right. The StyleWriter has a couple of Achilles' heels to go along with its innovative design, razor-sharp output, and low

price. For starters, the thermal inkjet technology it uses has a drawback: The ink smears if you get it wet. Even a moist fingertip is enough to streak the ink, although the output generally remains legible.

A more serious shortcoming of the StyleWriter for most users is speed. You get what you pay for: This ImageWriter-priced printer also boasts ImageWriter printing times. In other words: It's *slow*. If you've never known the speed of laser printing, you'll find it adequate for light-duty printing. But if you're used to printing pages per minute, you'll find it tough to go back to minutes per page.

In our benchmark tests (see Figure 2), the StyleWriter took roughly 15 minutes to churn out a relatively simple (five-page, four-font) Microsoft Word document from a Mac Classic — about seven times as long as most low-end laser printers. That may be acceptable for term papers and correspondence, but it's too slow for most business applications. And if you think that that sounds like a long time, be warned that the StyleWriter ground away on our two-page, four-font Excel-spreadsheet test file for 23 minutes.

Compared with a laser printer, the StyleWriter crawls. In fact, when tested with a Classic, the StyleWriter was soundly beaten by the *ImageWriter* on two out of three test documents. Because with the StyleWriter, your Mac's CPU does all the work of imaging a page (the printer has no "intelligence"), you will see significantly better performance when printing from significantly faster Macs. For example, Apple claims that printing from a IIci is roughly three times as fast as printing from a Classic.

The StyleWriter's poor performance is exacerbated by

### Now With Mirror's New Low Pricing, There's No Reason To Buy A No Name.

45 MB Removable - \$497 MIRROR 45 MB External - \$327

Some unfamiliar hard drives have popped up lately in the back pages of industry magazines. Most promise cutrate prices, and quick delivery. Easy come, easy go.

Mirror believes a big part of what you buy in a Macintosh hard drive is a company that's going to be around longer than

> the warranty. One that's as dedicated to quality, service and

support as it is to low prices.

And Mirror's been around almost as long as the Mac itself and doing better than ever. Last year was one of record sales and growth. Macintosh users have come to rely on us for quality products and superb service. Now you can purchase a Mirror drive for one additional reason...low price.

Now, thanks to higher volume and improvements in operating efficiency, Mirror is able to offer some of the most attractive drive prices found in any part of the book. We've done it without cutting corners and still back it with a complete 2-year warranty and a 30-day money back guarantee. So not only is owning a Mirror drive a safe buy, it's also now a very smart buy.

MIRROR TECHNOLOGIES

1-800-654-5294

Please circle 166 on reader service card.

Technical Support Hotline: (612) 633-2105 Hours: Weekdays 8 a.m. -6 p.m. CST Telephone: (612) 633-4450 Fax: (612) 633-3136 2644 Patton Road, Roseville, MN 55113

HARD DRIVES	20MB	45 MB	50 MB(Q)*	80 MB	105MB(Q)	210 MB(Q)	290MB	595MB	1.2GB	45MB Remov.	600MB Optical
EXTERNAL	\$297	\$327	\$417	\$467	\$527	\$947	\$1497	\$1997	\$2697	\$497**	\$2997**
INTERNAL	\$237	\$267	\$357	\$407	\$467	\$887	*(Q) den	otes Qua	ntum Driv	ve "Price Includ	es One Cartridge

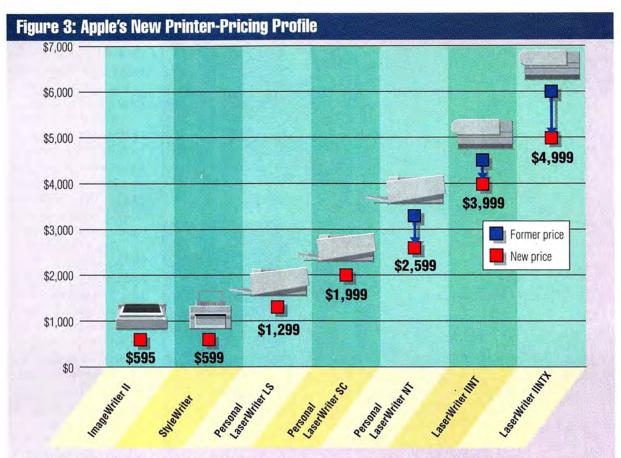


Figure 3: The low prices of Apple's new printers are complemented by reduced pricing on the company's three most expensive models.

the fact that Apple's PrintMonitor spooler, which comes as part of the Mac's system software, doesn't work with the StyleWriter (although Fifth Generation's \$99 SuperSpool does). That's the bad news. The good news is that Apple plans to correct this problem, perhaps by the time you read this.

The StyleWriter may be slow, but Apple has managed to improve output quality over that of the ImageWriter, with a sixfold increase in the number of pixels on a page, while holding the line on price. At \$599, the StyleWriter costs only four bucks more than an ImageWriter II. And given that Apple has no plans to lower the cost of the ImageWriter, there are really only a few reasons to even consider buying one these days: (1) You need a wide carriage for oversized documents; (2) you need color output, which you can get with the ImageWriter's multicolored-ribbon option; (3) you need an impact printer that works with multipart forms; or (4) you need the AppleTalk-network capability of the ImageWriter but can't afford a networkable laser printer (the StyleWriter can't be networked).

If you add a PostScript-emulation program such as Freedom of Press Light to the StyleWriter, you'll suddenly

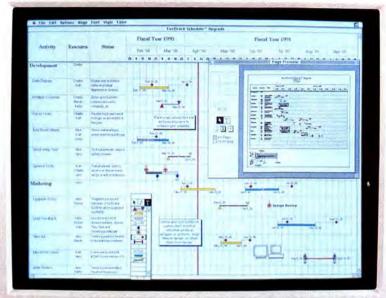
have high resolution and PostScript compatibility available for about \$700 or less (depending on street-price discounts). Although the StyleWriter's slow output speed makes this option unsuitable for high-volume applications, it might make sense for anyone on a tight budget, students, or businesses that do only light-duty printing.

### **Low-Cost Laser Printing**

Apple's other new printer is the Personal LaserWriter LS (see Figure 4). On the outside, it looks just like the previous low-priced laser champ from Apple, the Personal LaserWriter SC. It has the same Canon four-page-perminute LBP-LX engine. The only immediately obvious new component is the price tag: \$1,299. That's \$700 less than the cost of the SC.

How'd Apple do it? Early LaserWriters contained nearly all the circuitry of a fully functioning Macintosh. To push prices down, the Personal LaserWriter LS forgoes much of that firmware. In its place, Apple has implemented a proprietary compression scheme that significantly reduces the time it takes your Mac to send a page to the printer. Although the printer controller contains only 512K of

### FastTrack Schedule 1.5



So much to schedule-so little time.

"Provides the highest degree of functionality and the best on-screen and printed graphic ability in its class." *MacUser*, *October 1989*.

Please circle 100 on reader service card.

Create and Update Presentation Quality Gantt Charts quickly and easily! Just draw activities right on screen, customize your bar types and add labels, graphics, text blocks and multi-level sub-activities. When you need to make changes to your schedule, updating is a SNAP!

### Some features:

- Schedule in hours, days, weeks, months, quarters, years, fiscal years and generic formats.
- Display start and finish dates in columns, or align to bars.
- · Display multiple activity columns.
- · Import and export data.
- · Much, much more!

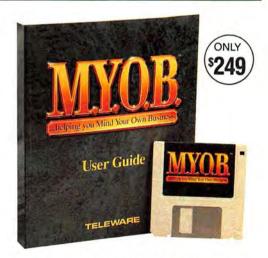
Please call for your **FREE** interactive demo kit! (800) 346-9413 or (703) 450-1980.

AEC Management Systems, Inc.
Another quality project-oriented productivity tool from AEC Management Systems, Inc.

### Incredible Accounting Software

€ In the last two years, M.Y.O.B. has received two Eddy-award nominations. As accounting programs go, it packs more punch per dollar than almost any other system on the market. What makes the program different is that it combines the functionality experienced accountants expect with the ease of use that novices demand. M.Y.O.B. is a solid, double-entry accounting system that can work in any small business. 99

\$\$\$\$1/2 MacUser April 1991



- General Ledger
   Checkbook
   Accounts Receivable
   Accounts Payable
- Inventory Administration

Demo Disk: 500!

CALL TODAY! 1-800-322-MYOB

NOW AVAILABLE AT YOUR SOFTWARE DEALER!

### **TELEWARE**

300 Roundhill Drive, Rockaway, NJ 07866

### The Truth About TrueType

No doubt you've heard about TrueType, Apple's new outline-font technology. Apple has been promising it for more than a year, as a major feature of System 7.0. With the introduction of the StyleWriter and the Personal LaserWriter LS, Apple has decided to unbundle it. These printers ship with a TrueType INIT that works with System 6.0.7 or later.

TrueType can do for you much what ATM (Adobe Type Manager) does: put better-looking type onto your screen and let you print high-quality type without using a PostScript printer.

The TrueType installation disk contains new TrueType-compatible drivers for all Apple printers and a new Font/DA Mover. Also included is a basic set of the fonts that come with Mac system software — Times, Helvetica, Courier, and Symbol — in TrueType format. By the time you read this, other printer vendors should be shipping

TrueType-ready drivers for their printers and third-party font vendors should be shipping additional fonts. Many drivers, such as HP's DeskWriter driver, already work with TrueType. One caveat, though: Because TrueType requires System 6.0.7, you'll have to upgrade if you haven't already done so.

Fortunately for those of us who are neither in the market for a new printer nor among those who plan to camp out at ComputerLand waiting for System 7.0 to arrive, Apple will make TrueType available to all System 6.0.7 users, free of charge. (Yes, we said "Apple" and "free of charge" in the same sentence.)

Don't get the misimpression that all TrueType fonts will be free, however. If you want to build your font library beyond the basics, you'll have to buy TrueType fonts, just as today you must buy PostScript fonts. Most major type vendors, including

Bitstream, Monotype, and LinoType, will offer their libraries in TrueType format at prices comparable with those of Type 1 PostScript fonts. As an alternative to boxing a new library of TrueType fonts, several companies have announced Type-1-to-TrueType conversion utilities, including Ares Software with FontMonger and Altsys with Metamorphosis Professional. However, whether these converted fonts retain the quality of the fonts in their original formats remains to be seen.

Perhaps you're wondering which one's better, TrueType or PostScript. So did we. To judge the quality of PostScript versus TrueType fonts, MacUser Labs did a preliminary comparison of the two technologies on a variety of popular printers, including Apple's two new offerings. Table B contains the results. Unless you're a font fanatic, you'll probably be hard-pressed to distinguish between the two. One thing is

### **Table A: Good-Looking Type Without a PostScript Printer**

### SCREEN

### **Macintosh Bit-Mapped Screen Fonts**

PRINTER

Bit-mapped fonts are tuned for the Mac screen's 72-dpi display. Each dot of each character is individually placed for maximum screen-display quality. The drawback is that for bit-mapped fonts to look good on-screen, you must install a separate bit-mapped font for each point size of each typeface you want to use. Very large and very small type looks jagged and distorted. Apple typically ships 9-, 10-, 12-, 14-, 18-, and 24-point bit maps for fonts included with Mac system software.

To avoid jaggies when using bit-mapped fonts to print to a non-PostScript printer, you must install a separate bit-mapped font for each size you want to print. The bit map required to *print* type at a specific point size is a *multiple* of the size required for *screen display*, however, and the specific multiple depends on the resolution of the printer. For example, to display clean 12-point type on the Mac's 72-dpi screen, you need a 12-point bit map. But if you want to use bit maps to print clean 12-point type to a 300-dpi printer such as the GCC PLP II, you need a 48-point bit map (300 is roughly 4 times 72; 48 is 4 times 12).

### SCREEN

### ATM (Adobe Type Manager) and PostScript Type 1 Outline Fonts

PRINTER

With ATM you don't need a separate bit-mapped font for each point size. You do need to install a bit-mapped font for at least one point size, along with a Type 1 PostScript outline (printer) font, for each typeface you want to display. At point sizes for which bit-mapped fonts are installed, the Mac uses the bit maps to display characters on the screen. At all other sizes, ATM uses the outline font to create the display, eliminating jaggies.

With ATM you can print high-quality type on a non-PostScript printer at any point size, because ATM uses the same font outlines as a PostScript printer does to create printed output. Instead of the PostScript processor in your printer doing this work, ATM does it in the Mac, taking full advantage of the printer's resolution. However, ATM can do this only for typefaces for which you have outline (printer) fonts installed on your Mac.

### SCREEN

### TrueType INIT and TrueType Outline Fonts

PRINTER

TrueType works in much the same way as ATM does. You must install TrueType outline fonts for each typeface you want to display. Although you need not install any bit maps, the Mac uses bit maps to display type at sizes for which bit-mapped fonts are installed. If ATM and both PostScript and TrueType outline fonts are installed for the same typeface, the Mac will use the TrueType outline to create the screen display.

TrueType lets your Mac print high-quality type to non-PostScript printers in typefaces for which you have TrueType outline fonts installed on your Mac. If you have PostScript as well as TrueType outline fonts installed on your Mac for the same typeface, the Mac will use the TrueType outline to print to non-PostScript printers (although it will use the PostScript outlines to print to PostScript printers).

	Macintosh screen display (72 dpi)	Apple ImageWriter II output (144-dpi dot-matrix)	Hewlett-Packard DeskWriter output <sup>†</sup> (300-dpi inkjet)	Apple StyleWriter§ (360-dpi thermal inkjet)	Apple Personal LaserWriter LS <sup>§</sup> (300-dpi laser)	QMS-PS 410 (Adobe PostScript) (300-dpi laser)
Bit-mapped fonts* (9-, 10-, 12-, 14-, 18-, and 24-point Times Roman installed)	araye iraye	REDE A	wxyz Z wxyz	NA	NA	wxyz Z wxyz
Adobe Type Manager/ PostScript outline fonts (10- and 12-point Times Roman bit-mapped and PostScript Times Italic and Times Bold Italic outline fonts installed)	mage: II	WXYZ X WXYZ Y	wxyz Z wxyz	wxyz Z wxyz	wxyz Z wxyz	wxyz Z wxyz
TrueType outline fonts (Times Italic and Times Bold Italic TrueType outline fonts installed)	Naka Naka	WZJEZ WZJZ	wxyz wxyz	wxyz wxyz	wxyz wxyz	wxyz Z wxyz

<sup>\*</sup>When only bit-mapped fonts were installed, the spacing on the screen and the ImageWriter output were so distorted that we had to move the large Z to see all the 8-point characters.
We used HP's custom outline fonts to print this sample.

Table B: MacUser Labs output samples of 8-point Times Italic and Times Bold Italic and a single character of 250-point Times Bold Italic on a variety of printers. (The middle-sized z in the upper right corner of each sample is a 400-percent enlargement of the 8-point Times Bold Italicz.) On each printer, we first used bit-mapped fonts only, then ATM with PostScript outline fonts, and finally TrueType fonts. As is obvious from the type samples, prior to ATM's release, type on-screen and printed to non-PostScript printers left something to be desired — quality. As for a quality comparison between ATM/ PostScript and TrueType, see if you can tell the difference.

clear, however - the jaggies associated with pre-ATM screen displays and printer output deserved to be laid to rest. How did we ever live with that stuff for all those years and like it?

OK, so which is faster? It looks like a draw. Our stopwatch testing of one application, a print preview in Excel 2.2a, showed ATM to be slightly faster — it took ATM 30 seconds to preview a page on a Classic, versus 36 seconds for TrueType - but Apple claims that TrueType is faster in some other situations.

For those of you who are worried about how peacefully TrueType fonts will coexist

with your current bit-mapped and PostScript fonts, our beta tests indicate that you have good reason. The leading, character widths, and kerning for Apple's Times and Helvetica TrueType fonts don't always match those of its equivalent bit-mapped fonts. And if you're using ATM (which also doesn't always match Apple's bit-mapped equivalents), you may find these discrepancies to be even greater if you switch to TrueType. The result is that documents you've formatted with Apple's bit-mapped fonts or with ATM may need to be reformatted when you use TrueType fonts, or line endings and page breaks may change. Both Fifth Generation's Suitcase II

(version 1.2.8) and ALSoft's MasterJuggler (version 1.53) support TrueType fonts.

Do you need TrueType? If you aren't using ATM, it's a definite winner. It may slow down your screen display and printing slightly — it takes more time for TrueType to create characters than it takes to display or print old-style bit maps - but type on both your Mac screen and in your printed output will look a whole lot better, especially at large sizes. If you already have ATM installed, you may not need TrueType. It won't hurt anything to install it, but there's no rush. You'll get it automatically when you make the switch to System 7.0 anyway.

Secause the StyleWriter and the Personal LaserWriter LS ship with TrueType outline fonts, we didn't test their output quality with only bit-mapped fonts

installed.

On interesting note: The lowercase Times Italic z from Adobe differs from the same character in Apple's TrueType font. The latter has a swash; the former

### **New Apple Printers**

RAM, it's enough to contain the compressed image of nearly any 8.5-x-11-inch page you care to send it (see the "How It Works: Personal LaserWriter LS Compression" sidebar).

Apple also played some fancy tricks to keep the speed of the data connection from a Mac to an LS high while keeping costs low. Instead of the fast (but expensive and difficult-to-use) SCSI connection of the Personal LaserWriter SC, the LS uses a standard serial connection. The printer externally clocks the Mac's serial port to achieve an amazing 909-kilobit-per-second data-transfer rate, almost four times the speed of the Mac's built-in LocalTalk-network circuitry.

In addition, unlike the StyleWriter, the Personal LaserWriter LS *can* work with Apple's PrintMonitor spooler. The result: You regain control of your Mac in roughly one-tenth the time you would have to wait without background spooling. You have to be running MultiFinder to take advantage of PrintMonitor — which might mean purchasing a RAM upgrade for your Mac. It's worth it.

All this is unseen and unintrusive to users. What matters is the output quality and performance. Quality is comparable with that of other printers that use the four-page-perminute LBP-LX engine, such as GCC's PLP II. However, despite the LS' innovative compression and serial-transferrate technology, the GCC PLP outperforms the Personal LaserWriter LS. The PLP was 20 percent faster than the LS on our Word test document, 40 percent faster on our MacDraw II test, and twice as fast on our Excel test.

Given that these two printers will probably be around the same price on the street (as we went to press, GCC told us that it was lowering the price of the PLP II to \$999), the PLP II appears to have an edge over Apple's newest low-cost laser offering. A final point worth noting: The PLP II can be upgraded to a PostScript printer with a controller-board

### **The Bottom Line**

Apple's two newest printers go a long way toward filling out the company's printer lineup at the low end while at the same time offering some real innovation.

The thermal inkjet **StyleWriter** (\$599), in addition to sporting one of Apple's most innovative designs, makes a huge leap in the quality of output (360 dpi) over the similarly priced ImageWriter (72 dpi). There's a big caveat, though: The StyleWriter is as slow as or slower than its dot-matrix cousin when used with low-end Macs such as the Classic. Classic owners can expect to see Excel documents, for instance, take twice as long to print from a StyleWriter as they do from an ImageWriter.

Apple's other new printer is the **Personal LaserWriter LS** (\$1,299), which offers performance equivalent to that of the Personal LaserWriter SC for \$700 less. A clever compression scheme enabled Apple to lower the price without sacrificing speed. Apple's innovation has already had one beneficial side effect: Other manufacturers have moved to lower their own prices to competitive levels.



Figure 4: The Personal LaserWriter LS looks from the outside like its predecessors, the Personal LaserWriter NT and SC. However, the LS' controller board (front) is much smaller than the typical printer controller.

swap; the Personal LaserWriter LS cannot, although once again, adding a PostScript emulator such as Freedom of Press is an alternative.

### The Third Shoe

At press time, Apple planned a third printer announcement: Prices were to be cut on most of the remaining players in the printer lineup, anywhere from 11 percent for the LaserWriter IINT to 21 percent for the Personal LaserWriter NT (see Figure 3). The only exceptions to the price cuts are the Image Writer II (whose sales will likely be limited to just the niche applications mentioned earlier) and the SC — which, although not being discontinued (yet), will likely not be aggressively marketed, as the Personal LaserWriter LS appears to be an improvement on all counts.

With these new prices, we can draw three conclusions: (1) Apple is finally providing competitive printer options at every important price/performance point. (2) The Apple logo no longer necessarily means that you're paying a premium price for peripherals with me-too performance. Many users will opt for the logo. (3) When Apple lowers its prices, third-party manufacturers are quick to follow suit. Printer manufacturers, including Abaton, GCC, Texas Instruments, and Hewlett-Packard, have announced a wave of price cuts. The year 1991 is shaping up as the year of higher-quality printing for less money.

Between them, MacUser editor Jon Zilber and technical director Henry Bortman have employed more printers than Stephen King and Danielle Steel. You can't afford to have your data turn up missing, so get Fastback II.

This is the world's fastest and most powerful backup software, simple for beginners and powerful for experienced users. You can back up to floppy disks, hard disks, tape, or any finder-compatible device. Make full backups, incremental backups, or differential backups. Select your backups by file, folder, date, or creator/type. Even get advance estimates of the time and volumes you'll need for each backup.

Fastback II saves you time by automatically

formatting disks or tapes. And its Data Compression feature can cut your backup time and number of volumes in half. Plus, you can fully automate your backups with complete macro control language.

This is also the only program with Advanced Error Correction, which recovers data even from damaged backup disks or tapes.

And if you need to back up tons of data, get Fastback Tape, the high density 120 meg cartridge tape drive that blazes along at up to 3 megabytes a minute. It's bundled with Fastback II, so unattended backups are a

snap. To find out more about Fastback II, call 1-800-873-4384. Buy Fastback II, and we'll send you a free copy of File Director,™ the ultimate file manager for the Macintosh— a \$129 value. Just write "back up" on the registration card and return it to us. This is a limited-time offer, so act now before it's too

Fifth Generation Systems, Inc. 10049 N. Reiger Road Baton Rouge, LA 70809 Technical Support: (504) 291-7283

# 60-page and designed

ie day I was diting for him tally knocked Belch" cup of hard drive. To

ers worse, I v spilled some on er strip, electrocuting

ment checks have pped coming, and I was wondering if someone reading this might need a junior art director with some hot Mac experience.

. . nyway, my

M. Sprong Forney, TX

### Some People Never Learn

In your December '90 review of Fastback II you said it's a good idea to backup all the

Apple is abo to change your percepti of inexpensi printers.



It used to be if you wanted a genuine Apple® printer (and all the privileges that go with it), you basically had a choice between two extremes. You could spend a little and get an ImageWriter® II. Or you could spend a lot and get a LaserWriter.®

Not anymore. As of today, Apple offers a complete family of affordable printers: The new Apple StyleWriter<sup>®</sup> is a 360-dpi laser-quality printer that combines a



With the addition of the new Apple StyleWriter and Personal LaserWriter LS, everyone has the right to a great image.

can afford with the kind of innovations only Apple can deliver. It's small. It's quiet. It utilizes 'True'Type' (Apple's new font technology that lets you scale and print characters smoothly and precisely, from the smallest footnote to the most enormous headline). Yet it costs just \$599. So it's great for students, people working at home, small businesses, or anyone who needs confidentiality when they're printing.

The new Personal LaserWriter LS is a full-fledged, no-compromises, four-page-per-minute LaserWriter. It uses a built-in, high speed serial port, so it won't be slowed down by complicated pages. It also incorporates TrueType. It prints in the background, so you can be working at the same time it is. And it offers a major breakthrough for a LaserWriter: a price of just \$1299.

And while our other laser printers aren't new, many have new, affordable prices: The Personal LaserWriter NT is our least expensive, networkable PostScript® LaserWriter. It's ideal for complex graphics. And for small groups of people.

The LaserWriter IINT is our most popular PostScript LaserWriter. A workhorse that prints up to eight pages per minute, and one that can be upgraded to a IINTX.

The LaserWriter IINTX is our highest performance, expandable PostScript laser printer. One that's become the benchmark against which all other printers are measured. And that, on a large network, is actually our most affordable printer.

Of course, there's also the trusty ImageWriter II. It's a dot matrix printer that's been proven to be extremely reliable. It's capable of working over a network. And it's still the best bet for running multiple-part and continuous forms.

Your authorized Apple reseller will help you find the one that's right for you. If you need help finding a reseller, give us a call at 800-538-9696, extension 615.

Because now more than ever, everyone has the right to a great image. The power not just to look your best. The power to be your best.\*

© 1991 Apple Computer, Inc. This ad was written, designed, typeset, planned, rewritten, approved, budgeted for, rewritten, and produced on a Macintosh. Apple, the Apple logo, ImageWriter, LaserWriter, Macintosh, Systems, Inc. Prices shown are suggested retail. But who pays retail anymore? And speaking of paying, your dealer can even help you arrange financing.





# FAST, FULL-FEATURED FAX Modems

You already own a state-of-the-art fax machine: your Mac! All you need is one of these six high-speed fax modems.

BY
OWEN W.
LINZMAYER
AND THE
MACUSER LABS
STAFF



fax machine is the latest office necessity. No more waiting for the antiquated postal service — and no more "I mailed it to you yesterday" excuses. Instead, you can save time

and money simply by faxing documents to clients across town or around the world. What could be easier? Well, how about skipping the paper-document step entirely and sending a fax directly from your Mac? Your client's fax machine will print your message in the same way as it does a standard fax—except that the output will look significantly sharper and more professional.

Sounds great — at least in theory. Until recently, however, we've recommended that you stick with old-fashioned paper faxes. When MacUser Labs last tested fax modems (see "The Fax Factor," August '89, page 148), the three candidates were plagued by slow transmission and printing speeds and network incompatibility. We strongly

# Fax Modems

suggested waiting for the next generation of products. Almost two years and many products later, we're happy to report that the wait's been worth it. Fax modems today are faster and less expensive, and they sport many features that were once exclusive to a few select products. Although not yet perfect, fax modems have come of age.

Because it can draw on the brains of your Mac, even the most basic fax modem offers a host of sophisticated standard features — speed dial, scheduled transmissions, and automatic redial, for example — that are expensive options on paper-based fax machines. What's more, faxes sent via modem look great, because you don't experience the degradation of image quality that you do with paper-based fax machines and because the image can't be skewed by an off-center misfeed.

If you create most of the documents you send on your Mac, a fax modem will serve you well. Other documents need to be digitized by a scanner first. But don't buy a scanner just for faxing — the cost of a scanner plus a fax modem easily outstrips the price of a well-outfitted stand-alone fax machine, which does the job *much* more conveniently (see "An Inside Look at Scanners," September '90, page 132).

So - which fax modem should you buy? One initial piece of advice: Choose one with a fast fax-transmission speed (9,600 bps) and a data-transmission rate of at least 2,400 bps. We tested six, ranging in price from \$449 to \$1,099, that have the ability to send and receive both faxes and data at these high speeds. These were the Abaton InterFax 24/96, Computer Friends LightFax 9624, Cypress Research FaxPro, Dove Computer DoveFax, Orchid Technology OrchidFAX, and Prometheus Products MaxFax. The Abaton InterFax 24/96's data performance is enhanced by its inclusion of the MNP (Microcom Networking Protocol) Class 4 errorcorrection and Class 5 data-compression protocols. These popular protocols enable the InterFax 24/96 to send guaranteed-clean data at speeds well above 2,400 bps — but only to other modems that also use the MNP Class 4 and 5 protocols (see "Thoroughly Modern Modems," January '91, page 100).

Although many slower (and cheaper) fax modems are available, their 4,800-bps fax-transmission speeds translate into higher phone bills, soon canceling out any initial savings — and causing finger-drumming aggravation as well. And if you don't think you'll ever want your Mac to receive a fax, you can buy a *send-only* fax modem (see the "One-Way Fax" sidebar).

We judged each fax modem for document-conversion efficiency, transmission speed, printing speed, image fidelity, ease of use, and the ability to handle telephone-line impairments. Furthermore, we pass/failtested each modem's data-sending

# **One-Way Fax**

Don't be surprised if you get a postcard from your modem vendor, offering you a send-only fax upgrade for surprisingly little money. Many chip vendors — such as Sierra Semiconductors, Rockwell Communication Systems, and Exar — have added send-only fax capability to their modem chips at relatively little extra cost. If you don't need to receive faxes — or if you already have a fax machine — a send-only fax modem is an inexpensive way to have send-and-receive data and outgoing-fax capabilities in one package. Several companies currently offer send-only fax modems, and many more products are on the way.

The Anchor 24E Mac Pac (\$235) is an external 24/96 send-only fax modem from Anchor Automation that features auto-dial/auto-answer and separate data and fax directories. Anchor Automation, 20675 Bahama Street, Chatsworth, CA 91311; (818) 998-6100.

The DataLink LC (\$349) is an internal fax modem from Applied Engineering, announced recently at Macworld and designed for — what else? — the Mac LC. Because the LC has only one internal slot, Applied Engineering is doing what a lot of card vendors are doing — it's building more functionality into a single card. Hence the DataLink LC has a place for you to add the math-coprocessor chip the LC is missing. The DataLink LC also comes in a V.42bis-supported version for \$379. (V.42bis is the most recent data-compression standard from CCITT.) Applied Engineering, P.O. Box 5100, Carrollton, TX 75011; (214) 241-6060.

By the time you read this, CMS Enhancements should be shipping the MiniFAX (\$349), a pocket-sized 24/48 send-only fax modem with software for the Mac and IBM-compatibles. CMS Enhancements,

2722 Michelson Drive, Irvine, CA 92714; (714) 222-6000.

The Eddy-award-winning TelePort data modem, from Global Village, now ships with send-fax software. (Current TelePort owners can upgrade for \$60.) The TelePort/Fax (\$265) is a compact package that plugs into the ADB (Apple Desktop Bus) port rather than the modem port and sends data at 2,400 bps and faxes at 4,800 bps. Global Village, 1204 O'Brien Drive, Menlo Park, CA 94025; (415) 329-0700.

The Magic 2400/4800 SendFax (\$99) and Magic 2400/9600 SendFax (\$149) are two send-only fax modems from MacProducts USA. MacProducts also offers an upgrade path from the Magic 2400/4800 SendFax to the Magic 2400/9600 Send & Receive fax modem. Look for a voice-mail-chip upgrade (\$50) that will turn your Magic 2400/9600 Send & Receive fax modem into an answering machine. MacProducts USA, 8303 Mopac, #218, Austin, TX 78759; (512) 343-9441.

Prometheus offers two new send-only modems: the TravelModem (\$299), an internal 24/96 fax modem for the Mac Portable, and the ProModem 24/96 MiniFax (\$299), an external for the rest of the Mac series. Both packages include MacKnowledge and MaxFax software, fonts, and cables. Prometheus Products, 7225 S.W. Bonita Road, Tigard, OR 97223; (800) 477-3473 or (503) 624-0571.

Two other fax bargains: The MX2400S/48 (\$149) and the MX2400S/96 (\$169) are external 4,800-bps and 9,600-bps send-fax modems from Zoom Telephonics. Both come with QuickLink II fax and modem software and seven-year warranties. Zoom Telephonics, 207 South Street, Boston, MA 02111; (800) 631-3116.

- Darryl Chan and Stephen Satchell

# Figure 1: Standard and Fine Resolution SiliconBan SiliconBan 95 Camino Rea 95 Camino Rea Sunnyvale, CA Sunnyvale, CA **Purchase Order Purchase Orde** BASEme TO: BASEm TO: 76 San Y 76 San 1 Belmont Belmont Attm. Tu

Figure 1: A fine-resolution fax message (at 203 x 196 dpi) contains twice as much data as a standard-resolution fax (203 x 98 dpi), so it takes longer to send. But fineresolution faxes (right) look much better than standard-resolution documents (left).

capability, simply to find out if it worked as advertised. In this year's fax fox-trot, a few products came close to dancing off with a perfect score - but a couple of entrants stumbled.

### **Fax Groupies**

Like a regular data modem, a singleuser fax modem is a hardware device that plugs into the Mac's serial port on one end and a telephone jack on the other (for a look at networkable fax modems, see the "Networking Fax" sidebar). Not only can a fax modem send data over the phone lines between computers but it is also capable of trading documents (facsimile transmissions) with fax stations - other fax modems or stand-alone fax machines. You can easily exchange documents with millions of fax stations worldwide thanks to agreement among manufacturers on a common standard, or fax protocol.

In the early 1980s, the CCITT (the French acronym that stands for the International Consultative Committee on Telephone and Telegraph, which is

an international standards committee based in Geneva) established a digitalcommunications standard called Group 3. With its data-compression scheme and maximum transmission speed of 9,600 bps, the Group 3 protocol lets most fax machines transmit a full page in less than a minute — several times faster than the analog-transmission rates of the earlier Group 1 and 2 standards. Furthermore, Group 3 offers

Adda To

greater resolution — 203 x 98 dpi in Standard mode or 203 x 196 dpi in Fine mode (see Figure 1).

The CCITT's new Group 4 protocol is even more advanced, but its widespread use must wait until the world's phone lines are upgraded to ISDN (integrated-services digital network), a high-speed, all-digital standard that isn't yet available on a wide scale and don't hold your breath. Thus, the lingua franca of modern faxing is still Group 3. Although many modern stand-alone fax machines are compatible with the earlier standards, the six fax modems evaluated this month can talk only to other Group 3 fax stations. Unless you plan to communicate with clients saddled with antiquated equipment, chances are that this won't present a problem.

### **Software Solution**

Unlike fax machines, whose features are built in to hardware, fax modems use software to handle tasks such as automatic dialing, broadcasting, and polling. You needn't worry about your modem's quickly becoming obsolete, because improvements in features and performance involve software revisions rather than expensive hardware upgrades.

A fax modem comes with three vital pieces of software: an INIT (startup document) for background sending and receiving; a fax application program for viewing, printing, and otherwise



Figure 2: With their Chooser-selectable printer drivers, fax modems let you specify options such as print quality, page range, and the recipient's fax number from within most standard applications' Print dialog boxes.

manipulating faxes; and driver software that tells the Mac to treat the fax modem just like a printer or any other Chooser-selectable output device. To make a fax, you simply "print" the document — be it plain text or a sophisticated DTP piece — from the application to the fax modem. A dialog box similar to the Print dialog box lets you specify options such as print quality, page range, and the recipient's fax number (see Figure 2).

When the print operation has begun, however, a fax modem doesn't simply spit a document complete with fonts and formatting codes onto the phone line. The receiving fax machine can't tell fonts from graphics — it deals strictly in black and white dots. The first step, therefore, must be to translate the document into a bit-mapped image.

Because fax modems transmit documents as bit maps, recipients can't use a word processor to edit a fax message after it's been received by their fax modem. To turn a fax message into an editable word-processing file, you must first save it as a TIFF file and then convert it to text with OCR (optical character recognition) software such as Caere's OmniPage. Several manufacturers are looking into bundling OCR packages with their modems, although none of them would hint at when they'd be so helpful. Our

preliminary tests showed that faxmodem-to-fax-modem transmissions could be very successfully converted into text by OCR packages. However, if a fax message originated from a standard fax machine and was even slightly skewed at transmission, satisfactory results might be more difficult to obtain.

But back to sending a message. When you choose Print from the File menu, you give control of the Mac to the fax driver, which first saves a bitmapped QuickDraw description of each page of the document to a temporary disk file. The driver then uses a CCITT-approved compression technique to reduce the amount of data to be transmitted over the phone line by up to 90 percent. Only after the document has been converted into this compressed-fax-file format - a process that can take more than a minute per page - do you regain control of the Mac.

Unfortunately, current fax software is incompatible with print spoolers, so you can't use a spooler to get back to work any faster. This may seem to be a hassle — but it's still quicker than printing a document, walking down the hall, and then waiting your turn at the office fax machine. Cypress Research promises that the FaxPro 2.0 will soon allow background document-to-fax conversion — you'll regain

control of your Macintosh once the QuickDraw description has been spooled to disk, a process that usually occurs in seconds (see the "On the Horizon" sidebar).

### **Dropping the Dime**

With older fax modems, you had to wait for the fax modem to do its dialing, handshaking, and sending to the recipient's fax station before you could regain control of your Mac. Fortunately, fax modems nowadays handle the details of transmission and reception more efficiently. The actual sending of the fax message occurs in the background — even without MultiFinder. Although it's possible to proceed with your work as the fax software toils in the shadows, it's best to avoid any CPU- or disk-intensive tasks, because the fax modem may starve for data and abort the transmission. Simple word processing, for example, should work just fine, whereas sorting a database might cause you some problems.

Fax modems typically send a document immediately after the driver has converted it into fax format, but you can also schedule transmissions for a later time or date — to take advantage of lower phone rates, for example. With many fax modems, you simply specify the send time in the Print dialog box. (Be sure your Mac is

# **Networking Fax**

The Mac's built-in LocalTalk-network capability is one of its strongest assets, as it lets workgroups share printers, file and mail servers, and other networked devices — such as fax modems. The Computer Friends LightFax 9624 and the Cypress Research FaxPro have software that turns a single fax modem into a shared, networkable device. You first install fax-client software on all the Macs on your network and fax-server software on your print or file server. You then create two folders (one for incoming faxes and one for outgoing ones) on your network file server, plug the fax modem into the server Mac's modem port and the phone line into the phone jack, and away you go. Sending a fax is virtually the same as sending one from a single-user fax modem.

Sending faxes out through a network works well, but receiving incoming faxes presents a problem — who gets each message? Currently, there is no software that can route an incoming fax automatically, but several vendors are studying this problem.

Nonetheless, network fax modems show great promise and should be considered for medium- to large-sized departmental networks.

An alternative to a network fax modem is to use your existing E-mail system to send faxes. Solutions' FaxGate (\$395) works with Microsoft Mail or CE Software's QuickMail and lets you send mail via BackFAX (running on your server) through your network to a fax station. You can create standard E-mail and send it to a fax phone number in addition to sending it to people on your mail system.

If you want to send fully formatted faxes over E-mail, use FaxGate's MailMaker software. This utility takes output from your word processor, spreadsheet program, DTP package, or other LaserWriter-compatible software and sends it as a true fax. Using MailMaker and FaxGate provides the same functionality as using network fax software such as that supplied by Cypress Research. Incoming faxes can be printed automatically or viewed on a MailMaker-equipped Mac.

- Stephen Satchell

# **Figure 3: Magnification**

With some reservation, we recommended the interFex to those analous to jump on the tax of modern bandwagon back then, but strongly suggested waiting for the next generation of products. Well, they're here now and we're happy to report that it was definitely worth the welt. Apple and STF have both bowed out of the fax modern market, five other manufacturers have taken their place, and Abaton released an improved interFex that's theoretically twice as fast as its predecessor.

ow and we're happy to report the bowed out of the fax modem

Figure 3: Because fax resolution — whether standard or fine — is higher than QuickDraw's 72 dpi, small type is barely legible on-screen when viewed at actual size (top). Thus, fax applications should offer a variety of view magnifications (bottom), as does the Abaton InterFax 24/96.

running at the specified time.) The fax INIT will kick in at the designated time and send the document automatically in the background, even if you are working in a different application. (See the "Fax-Modem Goodies" sidebar for information about automatic wake-up utilities.)

Yet another transmission feature is enveloping, which means placing several fax-formatted files in an "envelope" to be sent as a single fax transmission. For example, you might send a client a word-processed proposal along with an architectural drawing. Only the InterFax 24/96, LightFax 9624, and FaxPro feature true enveloping. The OrchidFAX and MaxFax first save a document as a fax file and then append additional documents to that file. Unfortunately, there's no way to reorder the documents once they have been appended.

The DoveFax provides a *call-grouping* option — whenever the DoveFax initiates a fax transmission,

it gathers any other faxes heading for the same phone number and sends them all as one transmission. Call grouping is a useful feature, but Dove should have included it as a complement to enveloping, not as a replacement for it.



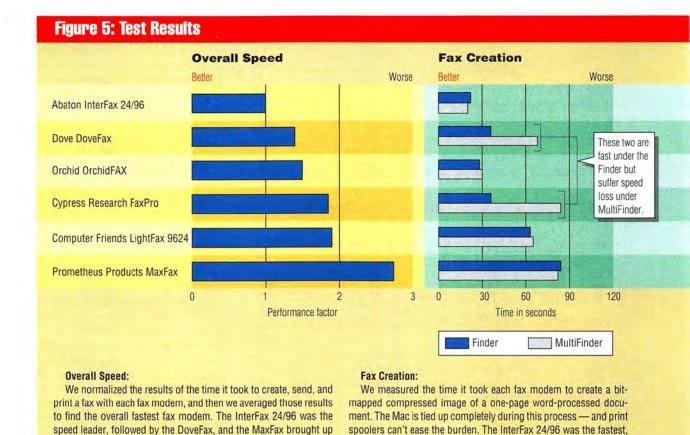
### **Wide Receivers**

You needn't run a fax application to receive a fax: When the phone rings, the modem answers and unobtrusively stores the fax to disk. Unless you've specifically requested to be notified of incoming faxes, you continue working uninterrupted. Faxes take up lots of disk space, however - a one-page business letter may be 40K, and graphics-heavy documents can easily gobble up more than 100K per page. Fax software stores inbound faxes in proprietary formats, so you need the appropriate fax application to view the faxes you receive - and you need patience as you wait for each fax file to be converted to QuickDraw for screen display.

Because fax resolution is higher than that of the Mac's 72-dpi screen, most faxes with small type are illegible when viewed on-screen at actual size (see Figure 3). You'll want to magnify your incoming fax to read it. Except for BackFAX, bundled with the OrchidFAX, all fax applications have multiple view-magnification options. Also useful is the ability to flip a fax 180 degrees — in case it was sent to you upside down, as might happen with a standard fax machine. The LightFax 9624 and the OrchidFAX both lack such an option.

Fax applications only let you view, print, or forward fax documents. To

> Figure 4: MacUser Labs technicians **Tony Bojorquez** (right) and Stephen Satchell used a telephone-network simulator from PTT (Processing Telecom Technologies) to simulate four different line conditions while using each fax modem to transmit to a Ricoh 1010L plainpaper fax machine.



further manipulate an image, you must export it to third-party applications. Except for that of the Cypress Research FaxPro, all fax applications can convert fax files to TIFF or other standard graphics formats recognizable by painting and page-layout application software.

### **Fancy Features**

the rear.

In addition to these basic features, fax-modem software programs offer capabilities (see Table 1) — activity reports, phone directories, and cover pages, for example — that are usually optional on stand-alone fax machines. All automatically create a fax-activity report — great for "Yes, we sent that purchase order on Tuesday" confirmation. Unfortunately, the software that comes with the LightFax 9624 and the MaxFax doesn't let you export the report. Although the DoveFax

software can export the log, it presents the information in a poorly organized fashion.

The FaxPro software allows only one directory, but all other fax-modem programs let you create multiple directories with frequently called names and fax-machine numbers. You can group individuals and then broadcast a fax to the entire group with a single command. With the InterFax 24/96, LightFax 9624, FaxPro, and MaxFax, you can import from existing databases—there's no need to start from scratch.

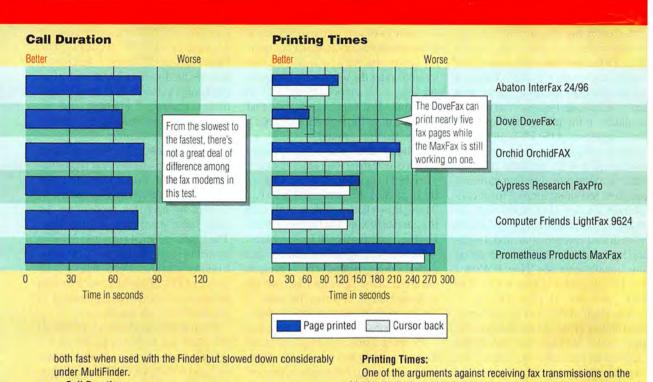
The ability to generate cover pages — with names, phone numbers, and number of pages — to accompany outgoing faxes is a particularly useful feature. All six fax-modem packages can create cover pages, but only the LightFax 9624, DoveFax, and OrchidFAX let you add custom text and graphics.

### **Test Results**

followed closely by the OrchidFAX. The DoveFax and FaxPro were

MacUser Labs has developed an extensive set of benchmarks to test not only fax-modem performance but document quality as well. We used two different one-page documents: To test speed, we sent a one-page Microsoft Word business letter; to test image fidelity, we transmitted an Aldus PageMaker composite document containing an 8-bit gray-scale TIFF image, a 1-bit PICT line-art object, and various-sized text samples.

We generated all the faxes — at both standard and fine resolution — on a Mac SE/30 and sent them via a PTT (Processing Telecom Technologies) telephone-network simulator to a plain-paper Ricoh 1010L fax machine. Although the results represent averages of multiple tests, real-world times may vary greatly, depending on several factors: the type of document being



### **Call Duration:**

The amount of time a modem spends with the phone off-hook determines the cost of a fax transmission. The DoveFax performed the best, and all the others did a respectable job.

One of the arguments against receiving fax transmissions on the Macintosh is that, with the single exception of the DoveFax, every fax modern takes a considerable amount of time to print even a simple one-page business letter. Our tests used a LaserWriter IINTX printer.

transmitted (text is faster to convert and send than graphics), the computer (more-powerful CPUs convert faster), the receiving fax machine (some are slower than others), telephone-line conditions (line noise can cause fallback to slower transmission speeds), and other software (Multi-Finder and INITs steal time from fax software during conversion and transmission).

Fax Creation. The first test measured the "hassle factor" — the total time from initiating a fax transmission until the cursor reappeared and we regained control of the Mac. This included the time required for the fax software to present various dialog boxes and then convert the Word document to a fax file. (Our technicians paused their stopwatches whenever human interaction, such as choosing resolution, page range, and

fax recipient, was required.)

The Abaton InterFax 24/96 under the Finder was the quickest, taking an average of 22 seconds from start to finish, with the Orchid OrchidFAX not far behind at 28 seconds (see Figure 5). The Cypress Research FaxPro and the Dove DoveFax tied in the middle of the pack at 36 seconds. The Computer Friends LightFax 9624 took almost twice as long, and last was the Prometheus Products MaxFax — the leader was nearly three times faster.

Running these same tests under MultiFinder, however, gave very different results. The DoveFax took almost twice as long — an average of 68 seconds — and the FaxPro took more than twice as long — an average of 84 seconds — under MultiFinder than they had under the Finder.

Call Duration. To keep telephone costs down, you must minimize the

time spent off-hook—the time the fax modem communicates over phone lines. Only after the modem and fax station have agreed, at the handshaking stage, on transmission variables—speed, resolution, and page width and length, for example—does actual fax transmission begin.

Sending the one-page business letter at fine resolution between two fax machines took only 40 seconds; sending the same letter via fax modem took almost twice as long. It was a tight race, but the DoveFax was the fastest. The MaxFax was the slowest, but Prometheus claims that the modem intentionally waits a little longer than others before sending each line so that the receiving fax machine can properly advance the paper. This might be an important consideration on older, presumably slower fax machines, but the Ricoh 1010L experienced no

# Fax Modems

problem keeping up with any of the fax modems.

Impairments. The timing tests discussed so far show the results we obtained when sending a document over a perfectly clean telephone line to a stand-alone fax machine. Such "best case" telephone lines are not always available in the real world, however, so we again used the PTT telephonenetwork simulator to send faxes between a pair of fax modems from the same manufacturer over four industrystandard test lines: a noisy local connection, a noisy land-based coast-tocoast connection, a terrestrial service with digital compression, and a satellite linkup. (For more information on line impairments, see "How It Works: An Encyclopedia of Phone-Line Defects," January '91, page 104.)

The OrchidFAX was the only modem that successfully sent the fax to its twin under all four line-impairment conditions, but quality suffered — the fax showed up with extraneous dots, streaking lines, and splotchy text. The EIA (Electronic Industries Association, a standards group that recommends specifications to CCITT) says that you can expect to encounter these

types of line impairments on less than 5 percent of all calls in the U.S. Because the chances of getting two bad lines in a row are extremely low, it's not terribly significant that a fax modem failed to send under the worst-case scenario. As long as it automatically tries to resend the fax, chances are good that the fax will go through without a hitch the second time around.

Although the DoveFax failed to send over the terrestrial long-line service, it managed to generate the best-looking faxes on the other lines. The InterFax 24/96 did well also, failing only with the satellite linkup. The LightFax 9624, FaxPro, and MaxFax all had problems — broken text, squashed headers, and garbage dots, respectively — even on clean lines. Don't give too much weight to these results, however, because all the fax modems sent acceptable documents to our stand-alone fax machine.

Printing Time. Although most fax machines automatically print faxes while receiving, fax modems (except the LightFax 9624, which has an option for automatic printing) make you take an extra step. You must launch the fax application, open the fax document, send it to the printer, and then

wait—and wait, and wait. Printing the one-page business document on a LaserWriter IINTX took an average of 2 minutes and 40 seconds. The DoveFax was the fastest at just over 1 minute; the InterFax 24/96, LightFax 9624, and FaxPro turned in respectable times of about 2 minutes; and the OrchidFAX and MaxFax had slower-than-average print times.

Image Fidelity. To evaluate image fidelity, we scrutinized the reproduction quality of fonts and graphics on the PageMaker composite document as sent by each fax modem to our plain-paper stand-alone fax machine. The LightFax 9624 simply refused to print the composite page — Computer Friends acknowledged that it was aware of a PICT-sorting problem with certain applications and promised to address this in an update soon.

Even at sizes as small as 6 points, all the other fax modems produced excellent text output—no doubt because we used ATM (Adobe Type Manager) 2.0, which scales outline fonts with impressive results. For good-looking text without ATM, your System file must contain LQ (letter-quality) fonts—the same kind of fonts used with the

# Fax-Modem Goodies

Every fax-modem owner eventually faces some grim facts about faxing. For one thing, sharing a fax modem with your telephone is not the most convenient office practice for, say, a small business: When the phone rings, how do you know who — or what — is calling? But unless you're a power faxer, you probably can't justify bringing in a dedicated phone line for faxing.

Fortunately, you don't have to. Technology Concepts' Fax Line Manager Model 202 (\$169) intercepts the fax station's telltale beep and automatically determines whether an incoming call is fax or voice. If it's a fax, the Fax Line Manager routes the call to the fax modem — or machine — and you're not disturbed; otherwise, the telephone rings normally. Technology Concepts, 1159 Triton Drive, Foster City, CA 94404; (800) 349-0900 or (415) 349-0900.

Energy-conscious faxers have to deal with a second problem—leaving the Mac on at all hours in order to receive faxes. You can get around this with a Remote/WakeUp cable (\$49.95), from Farallon Computing. Plug one end of the cable into your fax modem's DB-25 connector (not present on the FaxPro or the DoveFax), and plug the other two connectors into the serial and ADB ports on the back of your Mac; then leave your fax modem in Auto-Answer mode. When someone calls you, the modem detects a ring and sends a "wake up"

command to the Macintosh via the ADB port. After all your INITs have loaded during startup, the fax modern receives the incoming fax. (If it was a voice call, the software automatically turns off the Macintosh after a period of inactivity.) Farallon Computing, Inc., 2000 Powell Street, Suite 600, Emeryville, CA 94608; (800) 344-7489 or (415) 596-9000.

The Ringo ET (\$69.95), from MacSema, works on the same principle as Farallon's Remote/WakeUp cable, but it powers up your Mac only after finding a carrier-detect signal on the line, thus eliminating false starts prompted by voice calls. Another useful product from MacSema is the WakeUp board (\$199). You can program this NuBus device to turn on the Mac whenever you specify and automatically invoke a macro key to perform whatever tasks you desire. The WakeUp board is compatible with MacroMaker, QuicKeys, and Tempo, to name a few. Although it's useful for sending scheduled faxes when rates are low, the WakeUp board can also, say, initiate a midnight backup or a predawn E-mail download. After performing the specified tasks, the WakeUp board shuts everything down in an orderly fashion, saving documents and quitting applications cleanly. MacSema, 29383 Lamb Drive S.W., Albany, OR 97321; (800) 344-7228 or (503) 757-1520.

# Figure 6: Printing With and Without ATM

# 95 Camino Rea Sunnyvale, CA

SiliconBan SiliconBan 95 Camino Rea Sunnyvale, CA

# Purchase Order

# **Purchase Order**

TO: BASEm

76 San 3 Belmont

Attn: Ju

SHIP TO: SiliconB

BASEme TO:

76 San Y Belmont

Attn: Ju

SHIP TO: SiliconB

Figure 6: For the best-looking text, always use Adobe Type Manager (right) or letterquality fonts such as those bundled with the Orchid and Prometheus modems. We also got favorable results with non-PostScript rasterizers such as Freedom of Press.

ImageWriterLQ—that are three times the size of those used in the document. For instance, if you use 12-point Helvetica, the software needs the 36point font when it converts the document to Group 3 format. LQ fonts prevent the jaggies that occur when the fax software tries to compensate for the differing resolution of the Mac's screen (72 dpi) and the Group 3 protocol (203 dpi).

Only Orchid and Prometheus provide LQ fonts with their fax modems; the other vendors recommend using ATM, and MacUser Labs strongly seconds that recommendation (see "Designing for Fax," elsewhere in this issue). ATM gives you more font flexibility and improves the look of fonts displayed on-screen and sent to most output devices (see Figure 6). We also got excellent results with Freedom of Press, the popular software

PostScript interpreter. Using ATM or Freedom of Press, however, won't make incoming faxes look any better -they've already been turned into bit maps.

If you're going to send technical drawings, dimensional accuracy is probably important to you. Fortunately, the FaxPro and OrchidFAX software offers an Exact Size option in the Print dialog box - a welcome option, because most fax modems tend to squash or stretch pages to show text in its best form, at the expense of accurate graphics reproduction.

Only the MaxFax sent good-looking gray-scale graphics. MaxFax software creates a randomized halftone dither of the entire image, with stunning results. Sending the same gray-scale image with any other fax modem resulted in a high-contrast Rorschachinkblot look-alike. (However, some

applications—such as PageMaker 4.0 -predither gray-scale images, so you may get acceptable results when sending PageMaker 4.0 files with other fax modems.) Gray-scale images take significantly longer to transmit than text or even line art, because very little compression is possible. Considering that the Mac is the preeminent graphics platform, we're surprised that grayscale capability isn't part and parcel of every fax modem.

Data Capabilities. In addition to sending and receiving faxes at 9,600 bps, the fax modems we tested can perform double duty, with their Hayescompatible 2,400-bps data capability. When you're not engaged in transmitting faxes, you can log on to on-line services such as CompuServe, GEnie, or any of the thousands of private bulletin boards across the nation. Of course you'll need telecommunications software to do so, and Computer Friends, Orchid, and Prometheus have thoughtfully provided workable capabilities. (By the way, the OrchidFAX can exchange regular Mac files with other OrchidFAX and AppleFax modems at 9,600 bps.)

To evaluate the data side of the fax modems, we used Software Ventures' MicroPhone II 3.0 to place a call to our local CompuServe access node, enter the Ziff-Davis Zmac Forum, and download a 12K utility from the software library. Each of the modems successfully weathered this pass/fail test. We then transmitted data files from modem to modem under simulated local and long-distance connections. All the modems worked well. As mentioned earlier, only the Abaton InterFax 24/96 includes the popular MNP Class 4 error-correction and Class 5 data-compression protocols.

### Ease of Use

Don't assume that because a fax modem did well in our benchmark tests, it's easy to use. In fact, none of the modems approach the push-button simplicity of most stand-alone fax machines. Some features that would make life with a fax modem easier aren't available in all the products. For example, you may want to scale a document before faxing it — but both the InterFax 24/96 and MaxFax send everything at 100 percent. This is particularly annoying if you want to send a large spreadsheet, for example, as a one-page document. And the lack of a Preview feature means that you can't be sure you're sending exactly what you want.

Because we experienced all manner of fax gremlins during testing, we came to appreciate feedback during fax activity. When it comes to providing information, the DoveFax wins hands down with its FaxStatus DA (see Figure 7). You know what's going on every step of the way. The InterFax 24/96 also keeps you well informed but only when you access the Control Panel to monitor fax activity. Most of the other fax modems leave you in the dark, some neglecting to display even

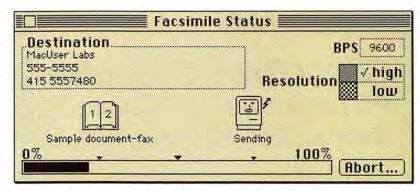


Figure 7: Dove's animated FaxStatus DA allows you to monitor fax activity, and it provides enough information for you to track down the cause of any problems that may occur.

the number of the fax machine on the other end of the line.

To use your fax modem for data, you'll want to switch freely between the Data and Fax modes. The InterFax 24/96, FaxPro, and DoveFax detect when you're using telecommunications software, and they switch to Data mode. When you have finished, they

automatically revert to Fax mode. With the LightFax 9624, OrchidFAX, and MaxFax, you must manually change modes through software.

# A Resounding Yes — But . . .

When MacUser Labs last examined fax modems, our feeling was that the three products on the market at that

# On the Horizon

Many new 24/96 (2,400-bps data, 9,600-bps fax) modems were announced or began shipping after we finished our MacUser Labs fax frenzy. By the time you read this, Cypress Research should be shipping a new, improved FaxPro, the FaxPro 2.0 (\$1,099), which features background conversion of transmitted and received faxes, an intelligent resending feature, more-flexible cover sheets, a tab-delimited and exportable activity log, and a host of other new capabilities. Our first-peek impression is that it's a vastly improved product. Cypress Research, 766 San Aleso Avenue, Sunnyvale, CA 94086; (408) 752-2700.

The COMplete Fax/Modem (\$599) is an internal 24/96 modem from PSI Integration for the Mac Portable. The COMplete boasts incoming-call detection, which awakens the Mac from Sleep mode to catch any incoming fax messages. The COMport 5/42 (\$699) is also an internal fax modem for the Portable; this model supports V.42bis and MNP Class 5 data compression. (V.42bis is the most recent CCITT compression standard, which provides a theoretical transmission rate of 9,600 bps, using a 2,400-bps modem.) PSI also plans to release an external version of the COMport 5/42, the COMStation (\$799), with an optional voice add-on module (\$149). PSI Integration, Inc., 851 E. Hamilton Avenue, Suite 200, Campbell, CA 95008; (800) 622-1722 or (408) 559-8548.

The MET 9624PF (Pocket Fax) modem is a 24/96 send/receive fax modem from Micro Electronic Technologies. The MET 9624PF is portable — it weighs less than 7 ounces and uses a 6-volt battery or AC adapter — and it supports the MNP Class 5 protocol and the V.42 standard. Micro Electronic Technologies, Inc., 35 South Street, Hopkinton, MA 01748; (508) 435-9057.

The OrchidFAX LT (\$499) is an internal 9,600-bps-data and 9,600-

bps-fax modem for the Mac Portable from Orchid Technology. It supports MNP 5 data compression and V.42 error correction. In Data mode, it lets you connect with other OrchidFAXes operating at 9,600 bps. Orchid Technology, 45365 Northport Loop W., Fremont, CA 94538; (800) 767-2443 or (415) 683-0300.

For those who want networkable devices, BackFAX/AppleTalk Version (\$495) should be shipping by the time you read this. BackFAX/ATV will provide many of the same benefits as Solutions' FaxGate but doesn't rely on use with an E-mail system. The package includes server software and software for five users. Additional five-user software packages will be available for \$195. If you already own the single-user version of BackFAX, you can trade up to BackFAX/ATV for \$275 — even if your version came bundled with a modem. If you still have an old AppleFax modem, Solutions is selling BackFAX 1.5 software for the low, low price of \$29 (plus \$6 handling) — but hurry, this generous offer is good only until the end of June 1991. Solutions, Inc., P.O. Box 783, Williston, VT 05495; (802) 865-9220.

Finally, for shattering the speed limit, you might want to consider the Prometheus ProModem 9600M Plus (\$995), a 9,600-bps-data and 9,600-bps-fax modem that supports the V.42 error-correction and MNP 5 data-compression standards. When connected to another MNP-supported modem, its theoretical speed limit is 19,200 bps — but don't expect such blazing performance on most transfers, because file compressibility and phone-line impairments lower actual speeds. The ProModem 9600M Plus automatically negotiates the highest possible setting with the modem you wish to call. Prometheus Products, Inc., 7225 S.W. Bonita Road, Tigard, OR 97223; (800) 477-3473 or (503) 624-0571.

- Darryl Chan

# **The Bottom Line**

Fax modems have come a long way since our last report, but there's still room for improvement. Make sure the fax modem you're considering comes with an ironclad guarantee that you can return it and get your money back if you're not completely satisfied. During testing, our technicians tackled INIT conflicts, dodged erratic behavior, and negotiated Byzantine inhuman interfaces. Although we did — finally — get each product to work as advertised, your computer's unique hardware and software configuration may not mesh with a particular product.

Work your way down our list until you find a fax modem that works for you.

The **Dove DoveFax** (\$449) takes top honors. It's an inexpensive gem that turned in a better-than-average fax-processing time, the shortest off-hook time, and the fastest printing time. It sent the cleanest faxes through impaired lines. When it failed to transmit, its FaxStatus DA provided plenty of information. The DoveFax is a polished product with only a few shortcomings to dampen our enthusiasm: Sending several faxes to different destinations is a hassle, because the DoveFax doesn't provide a true envelope capability, nor can it import or export a phone directory. (Dove plans to release a stand-alone application to address this last problem.) And DoveFax under MultiFinder was much slower at creating a fax than it was under the Finder.

The Abaton InterFax 24/96 (\$495) was the fastest at creating a fax and had the second-fastest regain-control and printing times, but it spent more time than average off the hook. Like the DoveFax, it performed well over impaired lines, and its documentation and user feedback are superlative. Modem jockeys will appreciate its automatic Fax-to-Data-mode switching and built-in MNP Class 4 error correction and Class 5 data compression. However, faxers may miss some key features — user-definable cover pages, a Preview mode, and scaling, for example.

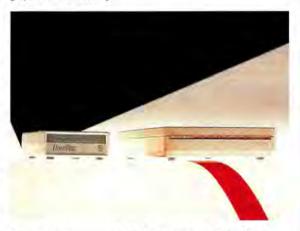
The Cypress Research FaxPro (\$1,099) turned in better-thanaverage times in all our benchmark tests, but its software is a major liability. Also, creating a fax with the FaxPro under MultiFinder was much slower than doing so under the Finder. Version 2.0 of the FaxPro software should be out by the time you read this, and if it lives up to the impressive demonstration we saw at press time, the FaxPro will be hard to ignore, despite its lofty price tag.

Another modem in need of a software revision is the **Orchid OrchidFAX** (\$599), which uses a custom version of Solutions' venerable BackFAX. Although Orchid thoughtfully provides LQ fonts, telecommunications software, high-quality documentation, and a

warranty, it's not enough to overcome BackFAX's lack of features. Although the OrchidFAX can send Mac files at 9,600 bps to AppleFax and other OrchidFAX modems and has a fast regain-control time, it delivered below-average performance in the off-hook and printing tests and performed poorly over impaired lines. Furthermore, BackFAX doesn't support enveloping, magnification of received faxes, or import and export of phone directories.

The Computer Friends LightFax 9624 (\$549) took too long to prepare our business letter and just plain choked on the PageMaker composite document. Its software has all the earmarks of an IBM port, using "classes" and "cards" in the phone directory and saving each fax page as a separate DOS-suffixed file — but the disjointed, photocopied, and three-ring-bound documentation is the dead giveaway.

Bringing up the rear is the **Prometheus Products MaxFax** (\$449), which finished last in our regain-control, off-hook, and printing tests. It lacks enveloping, scaling, previewing, and the ability to export the activity report. On the other hand, the MaxFax is inexpensive and comes with LQ fonts and a full-featured telecommunications application. The MaxFax also sent the best-looking (actually, the *only* good-looking) gray-scale images — it may be your only choice if gray-scale graphics are a necessity.



In overall performance, the DoveFax and the InterFax 24/96 virtually tied for first place, but the DoveFax (left) had shorter call-duration times. The InterFax 24/96, however, gave more consistent results under MultiFinder and the Finder.

time — the Abaton InterFax 12/48, Apple Computer AppleFax, and STF Technologies FAXstf—left a lot to be desired. We recommended the InterFax 12/48 to those anxious to jump on the fax-modem bandwagon but strongly advised holding off until the next generation of products.

In general, the new crop of fax modems is far superior to the old—faster, less expensive, easier to use, and bearing a host of standard features that were once exclusive to only a few select products. All the fax modems we tested let you schedule transmissions (so you can take advantage of after-hours phone rates); batch faxes from different programs together to send at one time; and receive faxes and store them to disk while you work, uninterrupted, in another program. Each also provides an activity report, at least one phone directory, and automatic cover pages. Some give you

more flexibility than others in these features. To find out which modems we liked for what applications, see the "Bottom Line" sidebar; despite any flaws each product may have, you'll still find sending Mac-created documents directly from your Mac relatively efficient and even pleasant.

This Owen W. Linzmayer may appear to be the wellknown San Francisco free-lance writer, but he is actually an amazing facsimile.



	A STORY			
				3/
● = yes	Abaton	Computer Friends	Cypress Research	Dove
O = no	InterFax 24/96	LightFax 9624	FaxPro	DoveFax
Price (list/street)	\$495/\$412	\$549/\$399, stand-alone \$799/\$599, networkable	\$1,099/\$825, networkable \$1,199/\$899, FaxShare	\$449/\$289
Pros	Good regain-control and print times. MNP 4 and 5 data modem. Polling support.	Good print time. Inexpensive. Only fax modem with voice-call detection.	Good regain-control, off-hook, and print times. Exact Scale option.	Flexible cover pages. Fastest off-hook and print times. Go regain-control time. Compac size.
Cons	Long off-hook time. Inflexible cover pages. No preview or scaling from Print dialog box.	Slow regain control. No preview. Clumsy interface.	Inflexible cover pages. No graphics-conversion feature. Expensive for stand-alone use.	No enveloping. Can't import export directory.
General				
Software version	1.20	2.13	1.00	1.1.1
Activity report	•	•	•	•
Print	•	•	•	•
Export	•	0	•	•
Auto data/fax switching	•	0	•	•
Transmission features				
Reduce/enlarge	0	•		•
Exact size	O ME TEN MARKET	0	•	0
Preview	0	0	•	•
Polling	•	•	0	0
Enveloping	•	•	•	0
Call grouping	0	0	0	•
Phone directories	unlimited	unlimited	I and the second	unlimited
Import directory		•	•	0
Export directory	•	•	•	0
User-definable cover page LQ fonts provided	O Times Helieties	0	0	•
La fortis provided	Times, Helvetica	none	none	none
Page sizes	letter, legal, A4, B4, A3, custom	letter, legal, A4, B5, custom (max. 8.5 x 14 in.)	letter, legal, A4, computer, fanfold, custom	letter, legal, A4, B5, half page, custom
Reception features				
Voice-call detection	0	•	0	0
Flip 180 degrees	•	0	•	•
Auto-print	0	0	0	0
Conversion	TIFF, PICT, paint	TIFF, paint	none	TIFF, PICT, paint
View magnification	5% – 1,200%	50%, 60%, 75%, 100%, 150%, 300%	10% – 400%	50%, 75%, 100%, 200%, 300%
Telecommunications softwa	re none	QuickLink II	none	none
Size (W x D x H, in.)	6.5 x 10 x 1.75	6.25 x 10.25 x 1.75	5.75 x 10 x 1.75	3.75 x 6.25 x 1.5
Warranty	1 year	1 year, 30-day MBG	1 year, 30-day MBG	1 year, 30-day MBG
Company	Abaton 48431 Milmont Dr. Fremont, CA 94538 (800) 444-5321	Computer Friends 14250 N.W. Science Park Dr. Portland, OR 97229 (800) 547-3303	Cypress Research 766 San Aleso Ave. Sunnyvale, CA 94086 (408) 752-2700	Dove Computer Corp. 1200 N. 23rd St. Wilmington, NC 28405 (800) 622-7627

# Any bill. Any bank. Anywhere. Any questions?



Finally, an electronic payment system that responds to all your bill-paying needs. **CheckFree** 

Imagine using your Macintosh to pay your bills faster and easier than ever before, without the hassles of checks, envelopes, and stamps. Think what it would be like to pay all your bills and do all your recordkeeping with just a few mouse clicks in just minutes per month. Now you can, with CheckFree, from Checkfree Corporation—the nation's leader in electronic payments.

Making payments with CheckFree is simple. Just pick the dates you want your bills to be paid, specify the amounts, and your software sends the information via modem to the CheckFree Processing Center. Fixed, recurring bills such as your mortgage can be paid automatically.

Many payments can be sent electronically from your account to their destination. Checks or laser-printed drafts are sent to individuals or companies not yet linked to electronic funds transfer networks.

With CheckFree, you don't have to switch banks, and you can pay any individual or company in the United States. That's because your payments are cleared through the Federal Reserve System, the same system that clears your checks today.

All CheckFree transactions are automatically recorded by the software and documented in your bank statement. Non-CheckFree transactions can be entered easily; and all your records, as well as specific reports of your finances, can be accessed through a few simple commands. (And that's especially helpful at tax time.) Plus, you can export CheckFree data to Excel® and MacInTax.®

Any questions? We have the answers. Call our toll free number right now. Any comments? Here is what the experts say: "CheckFree makes bill paying a quick, painless task rather than a monthly ritual to be dreaded..."—**PC Magazine.** "I said I'd try it, but I wasn't sure I'd like it. I like it."—Chris Shipley, **PC Computing.** 

Any doubts? If you don't agree that CheckFree software delivers a faster and easier way to pay your bills, we'll refund your money.\* So don't waste any more time CheckFree® software is available at leading retailers and direct order dealers including Egghead Discount Software® Electronics Boutique® Babbages® Waldensoftware® Software Etc.® Soft Warehouse® MacConnection® and MacWarehouse®

(or checks or envelopes or stamps). Get CheckFree today.

CheckFree software is available at retail stores, or by phone for \$29.95 plus \$4 shipping and handling. CheckFree service is only \$9.95 per month for your first 20 payments, then \$3.50 per each additional ten payments or portion thereof. That's not much considering the time you save and hassles you avoid. Plus your first month of service is free.

Call 1-800-882-5280

**CheckFree** 

Hardware Requirements: Macintosh\* 512KE or higher 800K drive and a Hayes\* compatible modem.

Checkfree is a registered trademark of Checkfree Corporation All other trademarks are the property of their respective corporations.

'Money back guarantee on software valid for direct orders only; return within 30 days of purchase for a full refund.



# Table 1: Features of 24/96 Fax Modems, continued

● = yes ○ = no	Orchid OrchidFAX	Prometheus Products MaxFax
Price (list/street)	\$599/\$439	\$449/\$294
Pros	Fast regain-control time. Long- term warranty. LQ fonts. 9,600-bps data transfer with other OrchidFAX modems.	The only gray-scale-capable fax modem. Inexpensive. Good telecommunications software.
Cons	Long off-hook and printing times. No enveloping or magnification. Can't import or export directory.	Longest regain-control, off-hook, and printing times. Inflexible cover pages. No enveloping. Cannot export activity report.
General		
Software version	1.05	1.05
Activity report	•	•
Print	0.00	0
Export		0
Auto data/fax switching	0	0
Transmission features		
Reduce/enlarge	•	0
Exact size		
Preview		0
Polling	0	0
Enveloping	0	0
Call grouping	0	0
Phone directories	unlimited	unlimited
Import directory	0	· And Andrews
Export directory	0	•
User-definable cover page LQ fonts provided	Courier, Symbol, Times,	Courier, Symbol, Times, Helvetica
Page sizes	letter, legal, A4, B5, fax, tabloid, custom	letter, legal, A4, B5
Reception features		
Voice-call detection	0	0
Flip 180 degrees	0	
Auto-print	•	0
Conversion	TIFF, PICT, paint, Glue	TIFF
View magnification	100%	75%, 100%, 200%, 300%
Telecommunications softwar	re FreeTerm	MacKnowledge 1.02A
Size (W x D x H, in.)	5.5 x 10 x 1.5	6.25 x 11.5 x 3
Warranty	2 years	2 years, 30-day MBG
Company	Orchid Technology	Prometheus Products, Inc.
	45365 Northport Loop W.	7225 S.W. Bonita Rd.
	Fremont, CA 94538	Tigard, OR 97223
	(800) 767-2443	(800) 477-3473
	(415) 683-0300	(503) 624-0571

# Criteria

Price (list/street) — The list price is the manufacturer's suggested retail price. The street price is an average actual price charged by dealers across the U.S. in January 1991.

Software version — Improvements in faxmodem features involve software revisions

rather than expensive hardware upgrades.

Activity report — A list of all documents sent to and received from fax stations.

Auto data/fax switching — Automatic return to Fax mode after using the data-modem features

**Reduce/enlarge** — Useful when you need to fax an oversized drawing.

Exact size — A fax modem may distort image proportions to send the entire image; an Exact Size option prevents any such changes.

Preview — This feature lets you view a fax before sending it out.

**Polling** — Calling a remote fax location and requesting a transmission.

Enveloping — Sending more than one fax from different programs in one transmission.

Call grouping — The fax modem groups all other faxes awaiting transmission to the same destination and sends them together.

Phone directories — Databaselike lists of names and phone numbers that ease the sending of faxes. Some fax-modem software lets you import an already existing database and export from the directory created with the fax-modem software.

**User-definable cover page** — The first page in any fax document. Some fax software lets you customize the look of the cover page with fonts and graphics.

LQ fonts provided — Letter-quality (LQ) fonts can improve the look of faxes you send in the absence of Adobe Type Manager.

Page sizes — What size pages can the fax modem send and receive?

Voice-call detection — Does the fax modem know when it's receiving a voice call rather than one from another fax station?

Flip 180 degrees — You may receive faxes sent upside down from a fax machine; being able to flip them over is a big help.

**Auto-print** — Can the fax modem initiate printing to a laser printer immediately on receipt of a fax?

**Conversion** — Good fax-modem software lets you convert faxes to other formats usable by other applications.

View magnification — Received faxes may be difficult to view at 100 percent because of the differences between fax and QuickDraw resolution. Good fax-modem software should let you enlarge received faxes.

**Telecommunications software** — Does the fax modem include software you can use to send data, or will you need to buy it?

Size (W x D x H, in.) —The case dimensions, rounded to the nearest quarter of an inch.

Warranty — Look for a money-back guaran-

tee (MBG). Even the best fax modem may not mesh well with your particular hardware and software configuration.

# The Best Data/Fax Modems. Guaranteed!





At Prometheus®, our only business is communication products. Consequently, you'll find we have the best data/fax modems you can buy.

And we're not the only ones who think we make the best products... MacUser nominated the ProModem® 9600 Plus as the Best New Communications Product for 1990 and also chose it as the ultimate modem for their ULTIMAC in the Sept. 1990 issue. Only Prometheus offers you so much.

**Only** Prometheus offers a complete communication solution! We include cable, fax fonts, fax and data communications software with every data/fax modem we sell.

**Only** Prometheus includes MAcKNOWLEDGE™ data communications software (a \$125 value!) free with every modem so you can easily access popular on-line services, bulletin boards and other computer systems.

Only Prometheus offers a complete line of data/fax modems to suit your communications needs. Prometheus has you covered from our send-only data/fax modems to our new ProModem Ultima, a high-end, 14,400 bps data/fax modem. — All with the same, great fax software!

Guaranteed! We're so sure you'll like our ProModems, we'll let you buy it and try it. If you don't agree it's the best product, return it to your dealer within 30 days for a full refund.

# Compare these features

	ProModem® 24/96MSR	Dove DoveFax™	Abaton™ Interfax 24/96
Price	\$449	\$399	\$495
Maximum Modem Speed	2400	2400	2400
Fax Speed	9600	9600	9600
Send/Receive Fax	~	V	~
Communications Software	~		
Includes Fax Fonts	~		~
V.42bis	Optional*		
MNP-5	Optional*		~
Software Features			
Scheduled Transmissions	~	~	~
Manual Resend	~	~	~
Manual Deletion	~	~	~
Multiple Address Books	~	~	~
Distribution Lists	~	~	******
Convert Fax	~	~	~
Print Fax	~	~	~
View Fax	~	~	~
Flip Page in View Mode	2	~	~
Online Help	~	~	
Fax Status Desk Accessory	~	2	
Automatically Launch DA	~	~	
Automatic Resend	~	~	
Automatic Deletion	~	2	
Custom Cover Pages	~	~	
Nested Distribution Lists	~	~	
Save To Fax File	~		~
Append To Fax & Send	~		~
Set Dialing Prefix	~		
Set Dialing Suffix	~		
Resend Unsent Pages Only	~		
Unlimited Cover Pages	~		
Import/Export Address Book	~		
Direct Grey Scale/Color Output	~		
Color Icons * These options also available as upgrades	~		

ProModem® Ultima	\$995
ProModem 9600M Plus	\$895
ProModem 24/96MSR	\$449
ProModem 24/96Minifax	\$299
TravelModem™	\$299
Network versions available	



<sup>\*</sup> This offer is good at participating dealers or for products purchased directly from Prometheus Products, Inc.

# The cheapest printer for your Macintosh is the one you already own. If you have an HP LaserJet, take a look at this guide to 16 printer cartridges, software packages, and specialized hardware products to make it compatible with your Mac.

# PRINTING FROM MAC TO



he Hewlett-Packard LaserJet is the most popular laser printer. You can find LaserJet IIs and IIIs almost everywhere there are IBM-compatible personal computers. Although the LaserJet's output quality may not be as good as that of many Mac printers, it's probably good enough for the reports and memos that your office churns out by the ton.

Fortunately, there are several easy and inexpensive ways to enable your Macs to print to LaserJets. You can connect a LaserJet to a single Mac or to a network of Macs and PCs, with or without PostScript compatibility.

If your output is limited text, bit-mapped graphics, and other QuickDraw images, you don't necessarily need PostScript compatibility. For example, using standard HP font cartridges with special Mac software, you can print a wide variety of fonts and typographic styles and special effects without PostScript.

However, your options don't depend solely on your output needs; although some of the LaserJet-to-Mac connections are available only with PostScript, others don't support PostScript.

Whatever your configuration, by using the LaserJet you already own, you'll save enough money to pay for that Mac upgrade or jumbo hard-disk-drive purchase you've been putting off.

JOHN RIZZO



# **LaserJet Printers**

### Doing It the Mac Way

The easiest way to connect Macs to HP LaserJets is to add LocalTalk and PostScript (or a clone) to the printer, especially if you already have a Mac network. LocalTalk is the implementation of AppleTalk network protocols built in to every Mac, and PostScript is the standard page-description language used by every Mac application that prints to a PostScript printer. When you instruct a Mac to print something, it uses LocalTalk to send PostScript page descriptions to the printer. Once you've added LocalTalk and PostScript to a LaserJet, the LaserJet becomes

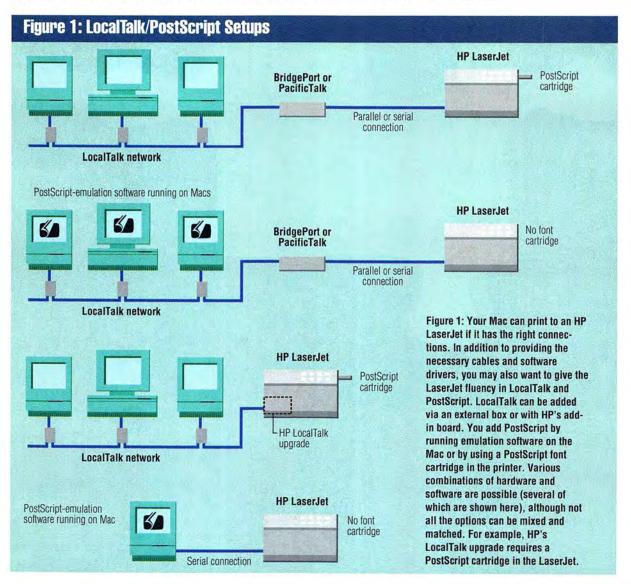
simply another printer option when you click on the standard LaserWriter driver in the Chooser.

There are two ways to add Local-Talk to a LaserJet: Install HP's Local-Talk port (called the Interface Kit for AppleTalk/HP LaserJet), or add an external device that bridges the printer to the network. As for PostScript, you can do it the easy way — add a PostScript-font cartridge — or the inexpensive way — use a software-only PostScript emulator that runs on your Mac (see Figure 1).

HP's LocalTalk upgrade can be installed in minutes with a screwdriver.

In addition to adding the LocalTalk port, the upgrade leaves the LaserJet with a serial and a parallel port, to either of which you can connect PCs. Unfortunately, you can use only one of these ports at a time, and you must reconfigure the printer each time you switch between ports. HP also sells a PostScript cartridge for the LaserJet.

The Pacific Data Products' Pacific-Talk and Extended Systems' Bridge-Port are external LocalTalk devices that act as logical extensions of the LaserJet — that is, the printer name in the Chooser shows up as BridgePort or as PacificTalk.



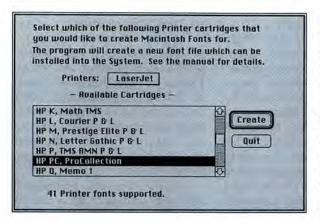


Figure 2: MacPrint's Font Mapper creates suitcases of Mac screen fonts based on the fonts in LaserJet font cartridges, giving you WYSIWYG fonts with a QuickDraw printer driver. The "41 Printer fonts" refers to the font cartridge currently selected, the HP PC ProCollection.

The BridgePort also supports PCs, which can be plugged into it simultaneously via its serial port and parallel port. Both of these ports, unlike HP's LocalTalk upgrade, can work at the same time as LocalTalk. In addition to connecting PCs to the LaserJet, the BridgePort gives PCs access to Maccompatible laser printers on a LocalTalk network. The connection to the printer can be made by either a serial or a parallel connection. (Parallel connections are faster and usually more desirable.)

The PacificTalk is a much simpler device, with one LocalTalk port and one parallel port. It costs \$200 more than the BridgePort, but it comes bundled with the PacificPageP•E, Pacific Data Product's PostScript cartridge, so it costs \$250 less than the combination of the BridgePort and HP's PostScript cartridge.

The three LocalTalk adapters performed similarly, with the BridgePort edging out the other two. All three models worked without any problems when tested on an internet containing five routers.

### PostScript Emulators

Using PostScript cartridges is a much easier and faster solution than running PostScript emulation software on your Mac, but the software alternatives are less expensive. There are three low-costemulators: Freedom of Press Light, from Custom Applications (see review, February '91, page 93), UltraScript for the Macintosh, from QMS Software

Products (February '91, page 93), and TScript, from TeleTypesetting (August '90, page 62). Note, however, that these packages don't work with HP's LocalTalk upgrade, which requires a PostScript cartridge in order to recognize the LocalTalk port.

The best PostScript emulator on the market is still Freedom of Press, which was the first product of its kind. FOP Light is a slimmed-down version of the full Freedom of Press (which costs five times as much, has more fonts, and supports more printers). The cost of the full version is nearly as much as that of an HP PostScript cartridge, which is easier to deal with and faster and gives you true PostScript. But for those on a tight budget, Freedom of Press Light is a good deal and, combined with Adobe Type Manager, gives you plenty of fonts to work with. At \$98, FOP Light has more features than the \$195 UltraScript or the \$145 TScript.

### One-on-One Solutions

If your Mac isn't part of a LocalTalk network, consider a one-printer, one-Mac solution. Although not as convenient as the LocalTalk/PostScript route, the one-on-one methods are more cost-effective if only one Mac is involved.

There are two parts to this type of solution: the physical connection and the software that provides the logical connection. The physical connection is usually through the serial port, but there are some exceptions. The software supplies the fonts and Chooser

drivers used in place of the standard LaserWriter driver.

The most popular of these packages is Insight Development's MacPrint, which comes with a serial cable to transmit from Mac to printer at 19,200 bps. The MacPrint driver operates similarly to Freedom of Press, except that MacPrint uses QuickDraw to describe the characters to be printed. MacPrint supports dozens of font cartridges from HP and third parties as well as the fonts built in to the Laser-Jet. (You cannot use a PostScript cartridge with MacPrint or the other QuickDraw drivers.)

Included in the package is Font Mapper, a utility that creates bitmapped screen fonts that correspond to LaserJet-cartridge fonts, giving you WYSIWYG text. It supports 63 font cartridges and internal LaserJet fonts, and its matches are quite good. Font Mapper creates font suitcases (see Figure 2) that you can install into your system by using Font/DA Mover, Suitcase II, or MasterJuggler. If you don't use a font created by Font Mapper, MacPrint creates a printer font based on the OuickDraw screen font. Using the MacPrint fonts is faster and yields better quality, however.

The Print dialog box gives you a choice of high, medium, and low output quality, as a dot-matrix-printer driver does. I saw little discernible difference in print quality among the different settings, but the "low" setting is quite a bit faster at printing graphics.

JetLink Express, from GDT Softworks, is a similar product that includes a serial cable and four outline-font families. It doesn't have access to as many fonts as MacPrint does, but it does have some unique features, such as support for outline fonts. Its outline fonts are not PostScript, but they do let you reduce or enlarge font size without loss of quality. JetLink Express can also perform automatic font substitutions. In addition, its printer driver is the first to support Apple's Communications Toolbox, a new tool for supplying a consistent interface for connectivity products (see Bridges,

# **LaserJet Printers**

September '90, page 295).

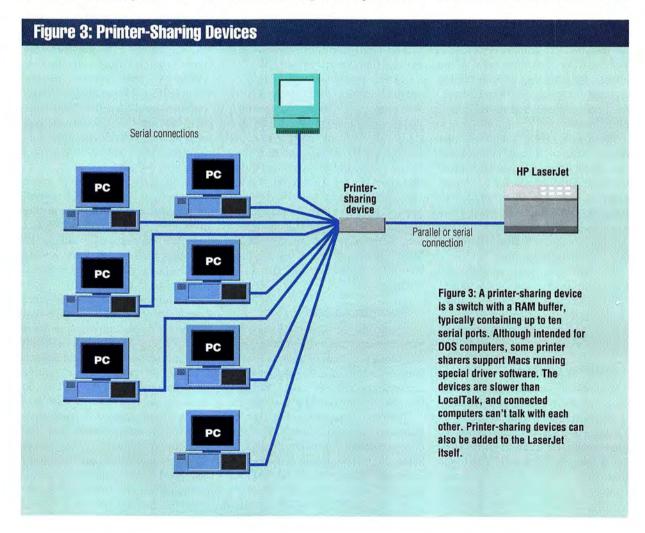
A competing product is the Grappler from Orange Micro, which comes in two versions for the LaserJet. The Grappler LS, like MacPrint and Jet-Link Express, comes with a serial cable and runs at 19,200 bps. The Grappler LX comes with a powered parallel connection. The similarities to MacPrint and JetLink Express end there, however, because the Grappler's software works on a completely different principle. Whereas MacPrint and JetLink Express install a different Chooser driver for each printer (Laser-Jet+, II, IID, IIP, and III, among others), the Grappler uses Apple's Image-Writer LQ driver. In fact, the Grappler was originally designed for printing to non-Mac dot-matrix printers such as

Epson-compatible printers.

Because the Grappler, MacPrint, and JetLink Express don't use Apple's LaserWriter Chooser driver, you can't use the Mac's Print Monitor spooler, which is part of Apple's LaserWriter driver. Without Print Monitor or another spooler, your Mac is tied up until the printing job is finished. The Grappler compensates for this by supplying a built-in print spooler accessible through the Control Panel. This spooler doesn't work as smoothly as Print Monitor — there is some jumpiness when you're typing during a printing job — but it is better than not having a spooler at all. MacPrint and JetLink Express do not have spoolers, but both are compatible with 5th Generation's SuperLaserSpool, which you need to buy separately.

The Grappler does have some disadvantages compared with its competitors. Both MacPrint and JetLink Express are faster than either version of the Grappler. MacPrint is better documented than the Grappler and has many more fonts (although you can add fonts to the Grappler with Alphabits, an add-on package of Bitstream fonts).

MacPrint is sometimes bundled with third-party hardware. One of these is the JetWriter, from Extended Systems, which takes a unique approach to connecting a Mac to a LaserJet. The JetWriter, an add-on board specifically for the LaserJet IIP, gives the printer an interface that is a cross between a serial connection and LocalTalk. When



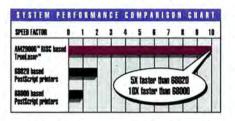
# Microtek Introduces the True Laser Printer. Breakthrough Technology at a Breakthrough Price.

The New Price/Performance Printer Standard.

Microtek presents the TrueLaser™ printer. Powered by the AMD

29000, a 32-bit RISC processor that's five times faster than the 68020 found in most Postscript printers. And ten times faster than the 68000 found in PCL or PDL printers.

Right out of the box it gives you 2MB of mem-



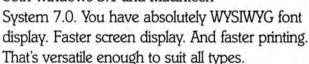
ory. And it can be configured up to 6MB. It's both Adobe PostScript®™

and HP PCL compatible. Now that's unmatched power at an unmatched price.

# The First Laser Printer with TrueImage and TrueType.

The TrueLaser printer is the first printer to ship with TrueImage technology. It includes

a bundle of 35 resident TrueType fonts. You also have a printer that's ready for both Windows 3.1 and Macintosh



The Best of Both Worlds. Postscript and TrueImage.

In addition to Truelmage, the TrueLaser printer will also work with every member of your Adobe font library. It beautifully publishes Adobe



PostScript,®™ Type 1 and Type 3 fonts. It also accepts and prints documents from Macintosh, IBM PC and PS/2

machines via AppleTalk, Centronics and RS-232 interfaces. It's unique autoswitching capability makes the entire process transparent and invisible. It's perfect as both a stand alone printer or a shared network resource. So join the future without leaving the past.

# All This for \$2695. Call Today.

At \$2695, you also receive a 1 year warranty with 6 month on-site service – a major breakthrough that you can't afford to miss.

Call 1-800-654-4160, or in California, 213-

**321-2121** for the name of the authorized Microtek dealer nearest you.

And get a first hand look at the only printer that does it all - for



The TrueLaser printer comes from Microtek, the leader in innovative scanning products.



\*Microtek Lab, Inc.. 680 Knox Street, Torrance, CA 90502, (213) 321-2121 (800) 654-4160. \*Microtek International Inc., No. 6 Industry East Road 3, Science-Based Industrial Park, Hsinchu Talwan, 30077, R.O.C., 886-35-772155
\*Microtek Electronice Europe, GmbH, Schlebstraße 72, D-4000 Düsseldorf 11, F.R. Germany, 49-211-526070 • D1950 Microtek Lab, Inc. All rights reserved. TrueLaser is a trademark of Microtek International, Inc. TrueImage, Windows and OSZ are trademarks of Microtek Oroprosition. Fost-Gript is a trademark of Apple Computer, Inc. 1BM is a trademarks of Microtek Sadchines Cooporation. Post-Script is a trademark of Microtek International Business Machines Cooporation. Post-Script is a trademark of Microtek International Business Machines Cooporation. Fost-Script is a trademark of Microtek International Business Machines Cooporation.

# **LaserJet Printers**

you configure the LaserJet IIP for the JetWriter, you set the I/O to parallel, but it's not a parallel interface — the JetWriter only fools the LaserJet into thinking it's parallel. You're actually using a high-speed serial interface, faster than any DOS serial interface. In fact, the JetWriter runs at LocalTalk speeds (230,400 bps), because it actually uses part of the LocalTalk protocols. The part of LocalTalk it *doesn't* use, however, is the code that lets you share printers; this is strictly a one-Mac show.

One drawback of using only part of the LocalTalk protocols is that you must run your cable from the Mac's printer port, thereby preventing you from connecting your Mac to a Local-Talk network. (You can, however, still connect to Ethernet or token ring via SCSI or add-in boards.) And unlike HP's LocalTalk card for the LaserJet, which also has serial and parallel ports, the JetWriter card has only the one interface. The JetWriter is faster than MacPrint's serial connection but costs almost \$200 more. On the other hand, because it comes bundled with the MacPrint software, it is cheaper than the LocalTalk/PostScript solutions.

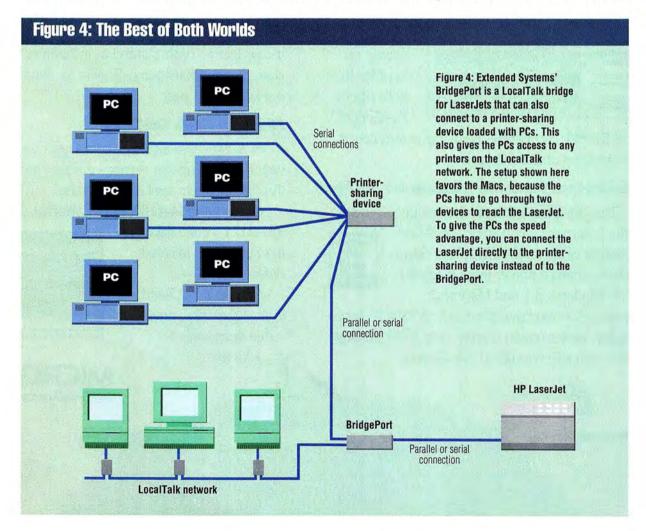
The JetWriter is also cheaper than another one-on-one solution: Post-Script emulation over a serial cable. For \$499, Pacific Data sells its PostScript-emulation cartridge on its own, without the PacificTalk LocalTalk bridge it is usually bundled with. You also need the Pacific MacPage Connection Kit (\$99), which

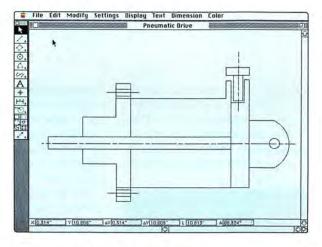
contains the serial cable and the necessary software.

Freedom of Press can also be used over a serial cable, but only if you're not in a hurry. Using a serial connection set at 19,200 bps, Freedom of Press took about six times as long to print as did either MacPrint over the same serial setup or PostScript over LocalTalk.

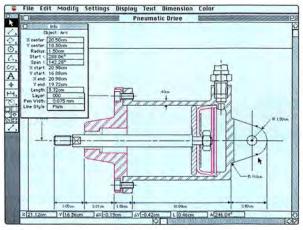
# **Printer-Sharing Devices**

In the DOS market, where networking capabilities are not built in to the CPUs, printer-sharing devices have become fairly popular. These boxes can connect one or more LaserJets to multiple PCs, usually via serial ports. You can add RAM to most of these products for a buffer, which becomes

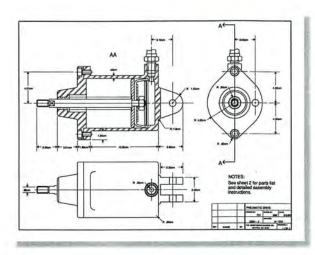




# DOODLE.



**DESIGN.** 



# DONE.

us.\$595



Introducing Generic CADD™— real CADD with a true Macintosh® interface. From first inspiration to final production drawing, it's the one program that you can use in every phase of your design.

Generic CADD combines drawing ease, drafting precision, and Generic Software's renowned technical support — all for hundreds of dollars less than the competition.

For a free brochure and the name of your nearest dealer, call us at 1-800-228-3601.

It's CADD that's worth a closer look.



IT DOESN'T GET ANY EASIER.

© 1990 Generic Software, Inc., 11911 North Creek Parkway South, Bothell, WA 98011, FAX 206-483-6969. Macintosh is a registered trademark of Apple Computer, Inc. Generic CADD and Generic Software are trademarks of Generic Software, Inc.

# **LaserJet Printers**

more important as you add PCs. Several of these devices now also support Macs when you add the correct driver software (see Figure 3).

ASP offers a bundle that includes MacPrint with its Maestro printer sharer, but any driver works. The Maestro also supports VAX and HP 3000 computers, in addition to PCs. There are three Maestro models; the top-of-the-line model 1000 has ten serial input ports and two parallel output ports.

You need DOS software and at least one PC to configure several of Maestro's ports beyond 9,600 bps. And you might want to do this, because the serial ports can be set to 115,200 bps. It's a capable unit; unfortunately, it comes with a bare-bones manual.

The ShareSpool, from Extended Systems, does not directly support Macs, but it works very well in combination with the BridgePort. This is a very good solution if you have a lot of PCs and a Macintosh LocalTalk network. The setup shown in Figure 4 is optimized for good Mac performance, but if PCs are emphasized in your office, you can switch the setup around: Connect the ShareSpool directly to the printer, and hang the BridgePort off the ShareSpool.

Although other printer-sharing devices can be used with the BridgePort, the ShareSpool has several things going for it. It has a parallel input port, which speeds up the connection to the BridgePort. The model 2089 can be totally configured by the DIP switches on the back, without using DOS software. A serial port and a parallel port are available for connecting to printers, although the 2089 can connect to only one printer at a time. Other ShareSpool models can connect to two printers.

Several companies package printersharing devices as add-in boards to the LaserJet, giving the LaserJet more ports. ASP's ServerJet, which has ten serial ports and 1 megabyte of RAM for buffer memory, was expected at press time to be outdone by a new version that will connect up to 12 computers and have 4 megabytes of memory. Like the Maestro, the Server-Jet supports Macs, PCs, VAXes, and HP 3000s.

Pacific Data Products' Pacific Connect LaserJet board is a low-cost solution with one parallel port and four serial ports that can run at speeds of up to 115,200 bps. It supports Macs if you buy Pacific Data Products' driver kit and also supports MacPage PostScript emulation. As with some of the other printer sharers, you must use DOS software to configure the ports.

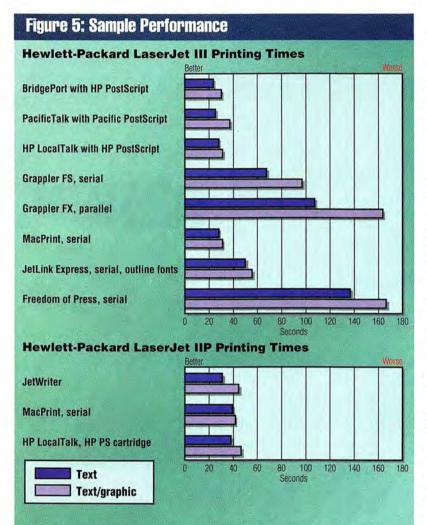


Figure 5: There are many possible combinations of font strategies and connection methods and settings, but here is a representative sample of how the products perform under ideal conditions. The chart shows how long (in seconds) it took to print two test documents: a 200-word text document with multiple styles of a single font and the same document with a bit-mapped graphic added. The BridgePort was the fastest LocalTalk connection, but MacPrint over serial cables did quite well compared with the LocalTalk/PostScript combinations. All serial connections were set at 19,200 bps. JetLink Express, which uses outline fonts, did much better than Freedom of Press, a PostScript emulator, which was the slowest driver of all. The LaserJet IIP, a slower printer than the LaserJet III, was used to test the JetWriter, which runs only on the IIP. The JetWriter is the fastest solution for the IIP because it runs at LocalTalk speeds. It beat HP's LocalTalk because it uses the MacPrint driver, whereas the HP LocalTalk card requires a PostScript cartridge, which adds processing time.

# Tired Of Being Held Up By Shady Characters?



Output from LaserWriterII NT, 300 dpi.



Output from LaserWriterII NT with Accel-a-writer upgrade, 1200 x 300 dpi, 150 lpi with 26 gray levels

Now you don't have to buy a new printer to get ultra-fast, high-resolution output. The Accel-a-Writer™ LaserWriter® Upgrade instantly converts any Apple® LaserWriter to a higher-speed, higher-quality laser printer. It's the next best thing to owning your own typesetter.

Prints up to 20 times faster. With Accel-a-Writer's highspeed RISC technology, you can output text, graphics and complicated halftones up to 20 times faster — without shady edges and jagged lines. Plus our 3-level Advanced Memory Management puts your printer to work preparing a second document while your first one's still printing.

Works well with others. Accel-a-Writer is fully compatible with Adobe's® PostScript® page description language. It comes with 2MB of memory and expands to hold up to 16MB. What's more, our ISI technology lets you print from PCs and Macs simultaneously, without additional hookups or switch-

ing. All models feature AppleTalk, serial, parallel\* and optional SCSI ports for maximum versatility.

Rewards you for trade-ins. Accel-a-Writer comes with a generous trade-in allowance that lets you lower your price even more when you send in the LaserWriter controller it replaces. And installation's simple. It just plugs inside your LaserWriter, with no special tools or service calls needed.

Call toll free. If you'd like to see how easy and affordable it is to upgrade your laser printer, call us toll free at 1-800-926-8839. We'll show you how to stop your laser

printer from holding you up, and give you better resolution in the bargain.

\*Centronics\* parallel interfaces not available for the original LaserWriter and LaserWriter Plus trinters



# Accel-a-Writer



© 1991 XANTE Corporation. XANTE Accel-a-Writer is a trademark of XANTE Corporation. Other brands and product names are trademarks or registered trademarks of their respective bolders. XANTE Corporation: 23800 Highway 98, Post Office Box 518, Montrose, AL 36559 USA, TEL: 205/990-8189.

### **LaserJet Printers**

Extended Systems has several addins for the LaserJet. The ShareSpool 2094 gives your LaserJet four parallel ports. Like Extended Systems' external ShareSpool boxes, the 2094 does not support Macs directly, but you can plug in a BridgePort to connect a LocalTalk network.

### The Bottom Line

Figure 5 summarizes how quickly various configurations printed our test documents. Speed isn't the only consideration; although all the alternatives offer good output and substantial cost

savings over buying a new printer, there's a trade-off between flexibility and ease of use on the one hand and how much you're willing to invest in printer add-on hardware and software on the other. One thing is clear: If you want to print to an HP LaserJet from a Mac, the fastest and easiest solution is to add LocalTalk to the LaserJet and pop in a PostScript cartridge, and you've finished — without adding a single byte of software to your Mac.

For sites that have a lot of PCs as well as a Macintosh network, Extended Systems' BridgePort LaserJet-to-

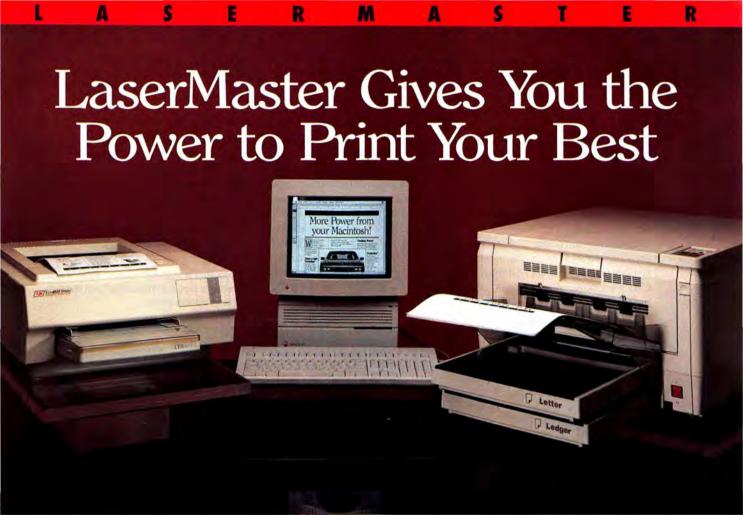
LocalTalk bridge (\$495) provides the most benefits and versatility for Mac as well as PC users. The BridgePort excels with its abilities to connect to printer-sharing devices and to let PCs share any LocalTalk printer.

If you have only Macs or if your PCs are on a LocalTalk network, HP's Interface Kit for AppleTalk/HP LaserJet (\$275) is cheaper. Like the BridgePort, it works very smoothly with the HP PostScript Cartridge (\$695) installed in the LaserJet.

Font snobs will revel in the "real PostScript" of HP's cartridge, but if

	CAI Freedom of Press	Extended Systems BridgePort	Hewlett-Packard Interface Kit for AppleTalk/HP LaserJet \$\$\$\$\%	Hewlett-Packard Postscript Cartridge
List price	Full version, \$495 FOP Light, \$98	\$495	\$275	\$695
Description	software PostScript emulator	external LocalTalk bridge	internal LocalTalk for LaserJet	font cartridge for LaserJet
Comments	Best software emulator. \$98 version has more features than other brands.	Easy to set up and use. Can plug in a printer- sharing device.	Easy to set up and use, Requires PostScript cartridge.	True PostScript.
Company	Custom Applications, Inc. 900 Technology Park Dr. Bldg. 8 Billerica, MA 01821 (503) 667-8585	Extended Systems 6123 N. Meeker Ave. Boise, ID 83711 (208) 322-7575	Hewlett-Packard 19319 Pruneridge Ave. Cupertino, CA 95014 (800) 752-0900	Hewlett-Packard 19319 Pruneridge Ave. Cupertino CA 95014 (800) 752-0900
	Pacific Data Products PacificTalk \$\$\$\$\frac{3}{2}\$	Pacific Data Products PacificPagePeE 4.0	QMS UltraScript \$15%	TeleTypesetting TScript
List price	\$699	\$499	UltraScript, \$195 UltraScript Plus, \$495	\$145
Description	external LocalTalk bridge	PostScript-emulation cartridge for LaserJet	software PostScript emulator	software PostScript emulator
Comments	Includes PacificPageP•E LaserJet cartridge. Easy to set up and use.	Works with Pacific MacPage Connection Kit (serial), \$99	Clumsy approach to Type 1 fonts. Good feature set.	Bare-bones interface. Limited features.
Company	Pacific Data Products 9125 Rehco Rd. San Diego, CA 92121 (619) 552-0800	Pacific Data Products 9125 Rehco Rd. San Diego, CA 92121 (619) 552-0800	QMS Software Products P.O. Box 58101 Santa Clara, CA 95052 (800) 635-3997 (408) 986-9400	TeleTypesetting Co. 474 Commonwealth Ave. Boston, MA 02215 (617) 734-9700

<sup>\*</sup>Products are rated here solely with respect to their usefulness in printing to HP LaserJets, so ratings may differ from those appearing in reviews in past issues.



# And, at 1000 or 1200 TurboRes, Your Best Will Look Even Better

# Printing Power For Macintosh II Users.

You've already discovered the power and flexibility of Macintosh® computers. Why not demand the same from your PostScript® printer? LaserMaster Corporation offers Mac users two powerful printing solutions - the MaxWriter 1200kx Personal Typesetter and the MaxWriter 1000kx Personal Typesetter. You get 1200 x 800 TurboRes™ output from the MaxWriter 1200kx and an 11 x 17-inch printing format. You also get print speeds of up to 20 pages per minute depending on page format. The MaxWriter 1000kx

delivers 1000 x 1000 TurboRes output up to five times faster than an Apple® LaserWriter IINT. Now that's power!

# Technologically Speaking.

We'll let the quality of MaxWriter output speak for itself. All of the type in this ad was produced from the MaxWriter 1000kx at 1000 x 1000 TurboRes. Just try to find a jagged edge - you won't, because TurboRes, our patented resolution technology, controls

the position and height of pixels on the printed page and eliminates coarse steps between pixels. We've taken the power of TurboRes and combined it with Microsoft's® PostScript-compatible TrueImage™ software to give you the best possible print results right on your desktop.

# AppleTalk™ and Ethernet Compatible.

Need a fast network printing solution? All MaxWriter printers are accessible through the Chooser using Ethernet or LocalTalk cabling. The result? Your MaxWriter is available to any Macintosh on the network.



# Typographic Versatility.

Let's face it, the 35 standard typeface collection included with most PostScript printers is just too limiting for a professional desktop publisher. That's why we include the LaserMaster 135 Typeface Classics with each of our printers. These Type 1 format typefaces, selected from the libraries of URW, ITC and Digital Typeface Corporation,™ offer

you an expressive range of serif, sans serif and decorative type styles. And, you can continue to use any Type 1 fonts from Adobe,\* Monotype or Bitstream type libraries.



# Free Sample Output.

See for yourself the difference LaserMaster can make in all of your PostScript printing - call LaserMaster Corporation today for a free sample of actual output. (612) 944-8726, Dept. 279.

Macintosh gives you the power to create your best. Now LaserMaster gives you the power to print it.



6900 Shady Oak Road, Eden Prairie, MN 55344 TEL: (612) 944-8726, FAX: (612) 944-9151

The MaxWriter 1200kc and MaxWriter 1000kc work with Macintosh II series computers (except IIsi). TurboRes is a trademark and patented technology of Laser-Mister Corporation. Macintosh, Laser-Writer and AppleTalk are registered trademarks of Apple Computer, Inc. PostScript is a registered trademark of Adobe Systems, Inc. TrueImage is a trademark of Microsoft Corporation. The AppleTalk® reprotocols and computer programs are licensed from Apple Computer, Inc. Specifications subject to change.

© 1991 LaserMaster Corporation

Please circle 170 on reader service card.

# **LaserJet Printers**

you don't mind "fake" PostScript, Pacific Data Products' PacificTalk (\$699) is an even better buy. The cartridge included in the package produces professional-quality fonts, and the LocalTalk bridge for the LaserJet performs admirably.

PostScript cartridges are the easiest and fastest way to go, but for those on a shoestring budget, a good option is CAI's Freedom of Press Light (\$98), the most full-featured PostScript emulator short of the complete Freedom of Press (\$495). (If you can afford the complete version, you're better off buying a PostScript cartridge.)

Printer-sharing devices don't allow for growth the way LocalTalk does and are slower; we recommend using them only if you have a lot of PCs.

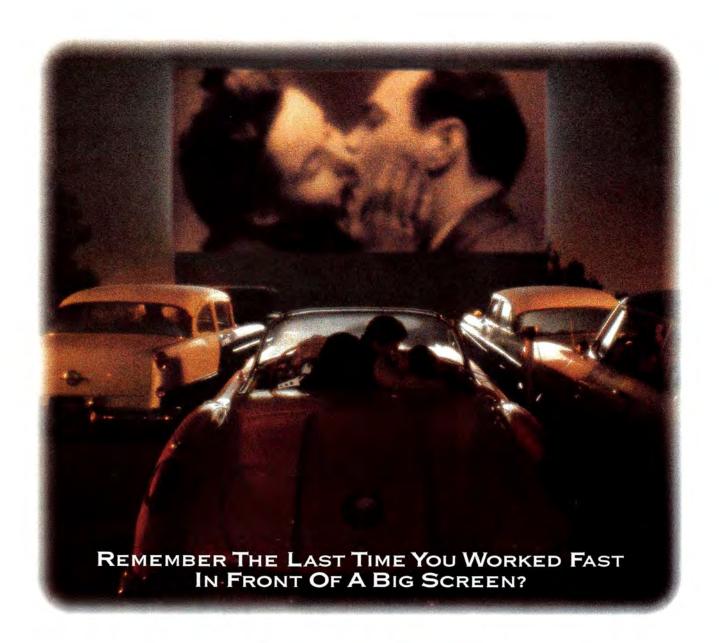
Finally, for those who have only one Mac they want to connect to a single LaserJet and don't need PostScript output, QuickDraw emulators work fine over a serial cable. Our pick here is JetLink Express (\$159) from GDT Softworks, which edges out Insight's MacPrint (\$149) thanks to its use of outline fonts. In either case, the tradeoff for giving up the PostScript emulation of Freedom of Press is a big increase in output speed.

John Rizzo is *MacUser's* technical editor and the author of more than 100 articles about Mac technology and connectivity.

	Extended Systems  JetWriter  \$\$\$\$	GDT Softworks  JetLink Express  \$\$\$\$\frac{1}{2}\$	Insight MacPrint \$555	Orange Micro Grappler \$\$\$\frac{1}{2}\$\$
List price	\$345	\$159	\$149	LS (serial), \$99 LX (parallel), \$199 Alphabits fonts, \$79
Description	high-speed serial board for LaserJet IIP (comes with MacPrint drivers)	outline-font drivers, serial cable	QuickDraw drivers, serial cable	QuickDraw drivers, serial or parallel cable
Comments	Runs at LocalTalk speed (230.4 kbps).	Good text manipulation, Supports Comm. Toolbox.	Utility maps screen fonts to cartridge fonts. Fast.	Built-in spooler. Slow.
Company	Extended Systems 6123 N. Meeker Ave. Boise, ID 83711 (208) 322-7575	GDT Softworks, Inc. 4664 Lougheed Hwy. Suite 188 Burnaby, BC V5C 6B7 Canada (800) 663-6222 (604) 291-9121	Insight Development Corp. 2200 Powell St. Suite 500 Emeryville, CA 94608 (415) 652-4115	Orange Micro 1400 N. Lakeview Ave. Anaheim, CA 92807 (714) 779-2772

<sup>\*</sup>Products are rated here solely with respect to their usefulness in printing to HP LaserJets, so ratings may differ from those appearing in reviews in past issues.

	ASP Maestro	ASP ServerJet	Extended Systems ShareSpool	Pacific Data Pacific Connect
List price	\$695 to \$995	\$495 to \$795	\$495 to \$1,695	\$399 to \$499
Description	external to LaserJet	internal in LaserJet	external to LaserJet	internal in LaserJet
Comments	Connects up to 10 Macs, PCs, VAXes, and HP 3000 computers and 2 printers. 1-MB-maximum buffer.	Connects up to 10 computers. 1-MB-maximum buffer.	Connects up to 10 PCs.  No DOS software required to configure.	Connects up to 12 Macs, PC 1.25-MB-maximum buffer. Lifetime warranty.
Company	ASP Computer Products 1026 W. Maude Ave. Suite 305 Sunnyvale, CA 94086 (800) 445-6190 (408) 746-2965	ASP Computer Products 1026 W. Maude Ave. Suite 305 Sunnyvale, CA 94086 (800) 445-6190 (408) 746-2965	Extended Systems 6123 N. Meeker Ave. Boise, ID 83711 (208) 322-7575	Pacific Data Products 9125 Rehco Rd. San Diego, CA 92121 (619) 552-0800



THE NEW MOBIUS TWO PAGE DISPLAY™ WITH 25 MHz 030 ACCELERATION IS ONLY \$1195.



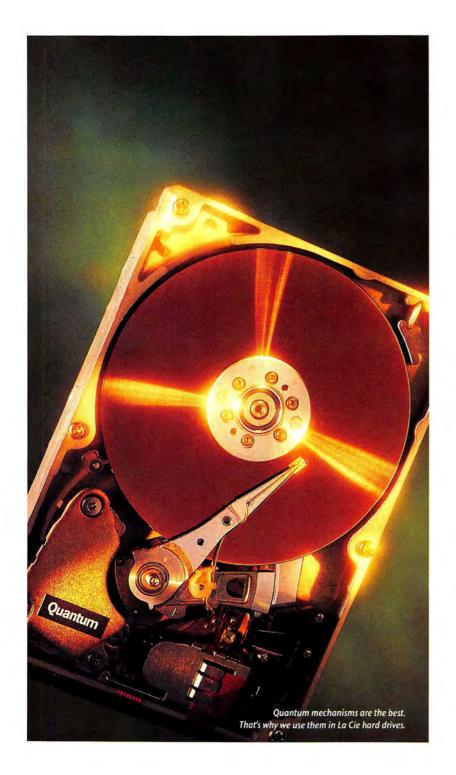


THE NEW MOBIUS ONE PAGE DISPLAY™ WITH 25 MHz 030 ACCELERATION IS ONLY \$995.

Working in front of a big screen can be as exhilarating as it used to be, if you own a Mobius display. Mobius One Page and Two Page displays come with built-in acceleration. So all your software runs faster—up to 600% faster than on your Mac SE. & Mobius offers exciting, irresistibly priced products for every Macintosh. By selling directly to you, we deliver technology that's every bit as good as (or better than) Apple or Radius, for less than half the price. & All Mobius

displays give you compatibility with System 7. Outstanding Zenith quality. One year warranty with free replacement in 48 hours. 30-day money back guarantee. Unlimited toll-free phone support. Major credit cards accepted. To order or request our exciting free catalog, call:

800-669-0556



Tsunami, Silverlining, La Cie and the La Cie Ltd. logo are trademarks of La Cie, Ltd., a Plus Development Company. All other trademarks are the property of their respective owners. All prices, specifications, terms, and descriptions of products and services herein are subject to change without notice or recourse. La Cie, Ltd. 19552 SW 90th Court, Tualatin, OR 97062. Phone (503) 691-0771, Fax (503) 692-8289. © La Cie, Ltd. 1991 All rights reserved. Printed in U.S.A.

# SIX REASONS WHY LA CIE HARD **DRIVES ARE THE** BEST YOU CAN BUY

A Quantum Difference.

Quantum drive mechanisms offer blazingfast effective access time as low as 8 milliseconds.\* No other drive mechanisms in their class (Mac\*compatible) run faster, which is why they are in La Cie drives.\*\*

\*Typical application access time using 64KB DisCache.\*

\*\*Seagate drive mechanisms also available (capacities from 300MB to 1.2GB).

# Software with a Silverlining.

Every La Cie drive includes a FREE copy of Silverlining, the #1-rated hard drive management utilities program.

Silverlining drivers can get 30% more speed from a drive than the competition. It works with any true SCSI drive, internal or external. So one program can manage it all. Plus,



MacUser says, "Silverlining is one of the most powerful and useful hard disk utilities you can find—most Apple engineers prefer it to Apple's own."

Silverlining optimizes your data so it's consecutive on your drive, which makes your applications run faster.

And, Silverlining drivers are intelligent. They test the drives' functionality at startup to ensure that everything is working properly. If it's not, it protects you.

For even more protection, every La Cie drive includes a FREE copy of Norton Utilities\* for the Macintosh. It automatically diagnoses, reports and repairs common and dangerous disk problems. Silverlining and Norton Utilities are regularly priced at \$149 each. So, you get software worth almost \$300—ABSOLUTELY FREE— when you buy a La Cie drive!



# A Company You Can Count On.

La Cie is a Plus Development Company (makers of the Hardcard\* XL), backed by \$400 million in assets. That means you can trust La Cie to provide a constant source of high-quality mechanisms and components. And you can be certain that we'll be around to help you with service and support. For a long, long time.



# The Most Unusual Warranty in the Business.

La Cie features a RENEWABLE 2-YEAR LIMITED WARRANTY.† If anything goes wrong with your La Cie Quantum

drive within two years, we'll repair or replace it within 48 hours—and then renew your warranty for another 2 years. Free of charge!

Every La Cie drive is backed by toll-free support from customer service and technical assistance experts.

†Restrictions apply. Please contact La Cie for complete warranty information.



# Award-Winning Design.



Hard drives that win design awards? Who says intelligence has to be ugly? The Tsunami and Cirrus hard drives have received prestigious awards from both the industrial design and computer communities.

La Cie drives are designed from the inside out. Designed to be quiet (with a ½ speed fan), lightweight (as light as 2½ lbs.), durable and reliable. Plus, they have an external termination and SCSI address switch, which means you'll never have to open the case for any reason! You don't win awards for these features, but you do win a loyal following.



# Rave Reviews from Critics and Customers.

Frankly, there's been a lot of talk about La Cie hard drives. Leading Macintosh consumer magazines praise us. Customers write us fan letters. In fact, we're happy to let critics and customers have the last word about La Cie drives. Because they tend to be words like these:

# **‡‡‡‡‡** −MacUser

"...the cream of the crop."-Macworld

"Of all the drives tested we recommend La Cie's drive."—MacUser
"This is an excellent drive and Silverlining is great!"—D. Jordan
Burbank, CA



La Cie offers internal and external hard drives from 40MB to 1.2 Gigabytes. Choose from the award-winning Tsunami, Cirrus, ZFP family and Internal drives. Plus, La Cie now offers the Bacster, a hard drive that attaches directly to the back of a Macintosh Plus or SE.

\$299

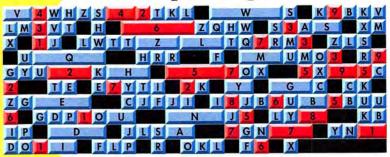
To order or for more information, call toll-free 800-999-0143, ext. 54



Please circle 415 on reader service card.

# This is your hard disk severely fragmented

This is how a typical fragmented hard disk looks. The abuse fragmentation can deal is a crime, and it's causing a national epidemic in offices everywhere. But the more you use your computer, the more your files are spread all over your hard disk. As a result, your disk has to work a whole lot harder than it has to. And increased head movement not only slows down your file access times, it will slow you down, too.



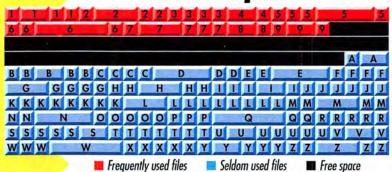
# This is your hard disk defragmented

Even defragmentation software can't help much. Wimpy defraggers just place pieces of individual files adjacent to each other. Defraggers just don't have the intelligence to constantly monitor your file useage. So, any increases in performance are modest and only temporary, disappearing as soon as you use your computer again.



# This is your hard disk with DiskExpress II

Only DiskExpress II has revolutionary Disk Optimatic<sup>TM</sup> technology designed to safely keep your disk optimized forever. And only DiskExpress II has the intelligence to work transparently while you work, the way you work. Which means only DiskExpress II can monitor your daily file activity and determine the absolute optimum priority for file placement on your particular computer. Frequently used files are placed first, then free space and then seldom used files at the back of your disk where they belong. That not only minimizes head movement, it delivers the kind of mind-boggling increase in speed and performance you could get hooked on and be better off for it. To order your new DiskExpress II 2.04, call ALSoft today.



# **Any Questions?**



# \*

DiskExpress™ II Disk Optimizing \$89.95

tttt

MultiDisk™ Disk Partitioning \$89.95

**t**ttt

MasterJuggler™ Resource Optimizer S89.95



ALSoft, Inc.

Numbers & Letters are scattered pieces of single files

P. O. Box 927 • Spring TX 77383-0927 713/353-4090 SALES • 713/353-9868 FAX

ALSoft, MasterJuggler, DiskExpress, MultiDisk and Optimatic are trademarks of ALSoft, Inc. All other trademarks ocknowledged. © 1990 ALSoft, Inc., all rights reserved. Shipping and handling S3 inside USA, S10 outside USA.

# **BUYER'S GUIDE**

# MACUS ETC. SINGLE STATE OF THE PROPERTY OF THE

Macuser | ABS

Check out the cover of this magazine.
Before it was printed — or even separated
— words and images were combined,
edited, altered, cropped, viewed from
across a room, argued over, and altered

and edited all over again. What made it possible were two now-essential tools for desktop color publishing that didn't even exist a few years ago: a true-color display system and a color PostScript printer.

Color is here, and it arrived faster and in more places than anyone expected. This *MacUser* Buyer's Guide details the current colorful state of the Mac both on the monitor screen and on the printed page. Development is moving so fast in this field that last year's award-winning hardware may be this year's also-ran. At the same time, the cost of doing color publishing on the Mac continues to drop, with good color PostScript printers costing only a little more than the original LaserWriter.

These two comprehensive lab reports on true-color display systems and color PostScript printers will help you decide whether it's time to think about adding some color gear to your Mac.

Entire contents 1991 Ziff-Davis Publishing Co., a division of Ziff Communications Co.

"New For Work Group"



1-800-347-3228



# To Save Over \$6000 On Your File Server



# **Apple**

Mac IIci with 80MB	\$6669
AppleShare software	\$799
Monitor	\$299
Keyboard	\$125

LocalLink Server \$999 included 90MB Drive Software included

**Jasmine** 

Total

Total

LocalLink is a super fast, 100% AppleShare 2.0 compatible file server. LocalLink's proprietary software enables the network manager to assign users, passwords and privileges. LocalLink is as fast of a server as a IIci. 90 MB to 1GB.



# Portable

Portable's sleek design, reliability and low cost is for the user who knows what value is.

Portable 40MB to 120MB from \$299

BackPac 40MB to 80MB from \$369





Memory
1Meg Simms \$49.95

Traditional "Direct Drive"

Offers all the premium features such as two surge protected AC outlets, a noiseless fan, a SCSI select switch and others too numerous to mention. Select the drive other hard disk manufacturers copy.

Direct Drive 40MB to 200MB from \$369



# Removable

Add another cartridge when you need more storage, and because our DriveWare software locates and locks out all bad sectors, you don't loose important data.

The Jasmine 45 Removable (SyQuest) \$549



# The Clipper

The world's smallest hard drive measuring 3" by 1" by 5", weighing less than 10 ounces and able to withstand a shock over 100G's. It has been designed to be directly carried from one Mac to another in a shirt pocket or briefcase. The drive plugs in directly behind the Mac.

The Clipper from \$399



# ColorVue

14" High Resolution Color Monitor for the price of Black and White. A Resolution of 640x480, offering a palette of over 256 simultaneous colors. ColorVue comes with a non glare screen and tilt swivel base.

ColorVue \$399



To Order With Your Visa or MasterCard in the USA, Call:

1-800-347-3228

Jasmine Europe Parc Club - 32 Jean Rostand 91403 Orsay Cedex France

Tel: 33 1 60 19 25 05 Fax: 33 1 60 19 10 32

Prices may change without notice. ©1990 Jasmine Technologies, Inc. 1225 Elko Drive, Sunnyvale, California 94089.

Featured products and pricing are valid in the 50 United States. For international inquiries call (408) 752-2900 or fax (408) 752-2916.

Jasmine, DirectDrive and DriveWare are registered trademarks of Jasmine Technologies. All other trademarks are of their respective manufacturers.

# THE PERFECT **IMAGE:** True-Color

You can't beat a 24-bit-display system for color desktop publishing, presentations, or artwork. We tested 20, and they all came through with flying colors.

ANDREW EISNER AND THE MACUSER LABS

STAFF

othing wows a crowd like a big, sharp color monitor. Whether you're selling a client on an ad campaign or selling products at a trade show, the breathtaking realism of true 24-bit color will make your Mac the center of attention. Until recently, however, the expense of all

those crisp pixels made 24-bit color the exclusive domain of professional graphic designers — who had no choice but to wait as their Macs slowly drew complex QuickDraw graphics. But 24-bit color is no longer only for big-budget artists and architects, and QuickDraw acceleration is becoming standard on many video cards. Not just faster and more affordable, these systems now consistently deliver higher-quality color than we found in last year's look at color systems (see "In Living Color," May '90, Buyer's Guide page 32).

If you're considering upgrading an 8-bit-color display system (monitor, NuBus video card, and cables) or if you are about to enter the world of color for the first time, now may be the time to invest in 24-bit color. Once you have, you'll have access to a photorealistic palette of 16.8 million colors, which the Mac creates by using Apple's 32-bit QuickDraw (the extra 8 bits, called the alpha channel, control effects such as transparency).



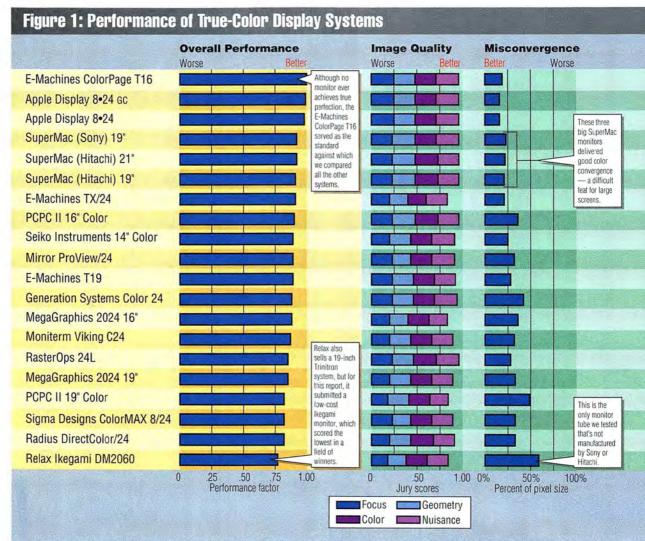


Figure 1: Our expert jury analyzed image quality, and our lab technicians quantitatively tested misconvergence, MTF sharpness, color tracking, and maximum usable brightness.

### **Overall Performance:**

To produce an overall ranking of the 20 display systems, we gave equal weight to subjective and objective scores and calculated the winner. For the second year in a row, the top honors go to the E-Machines ColorPage T16.

### Image Quality:

With all the monitors gueued up, warmed up, and degaussed, our jury analyzed each screen from a normal viewing distance. Our major

concerns were overall focus, geometry (did the monitor distort objects on-screen?), color consistency and "warmth," and lack of nuisance (glare, flicker, jitter, noise, and so on). Eight of the display systems achieved almost-perfect scores.

### Misconvergence:

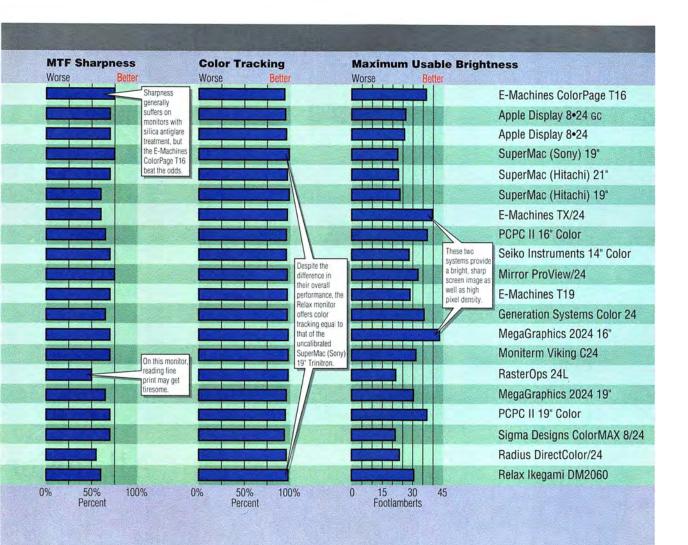
We measured the maximum electron-beam displacement, or misconvergence, at the center and corners of each screen. The results are shown here in terms of pixel size — the poorest performer was only a bit more than half a pixel off-center. Misconverged color produces a rainbow effect around objects on-screen. Unlike in the other charts, the longer bars (higher percentages) indicate poorer

If the jump to a 24-bit, true-color system would prove too much for your budget or if you want a color display only for normal office applications, consider equipping a Mac LC with Apple's 16-bit VRAM (video RAM) option, for 32,768 potential colors (see

the "LC Option" sidebar). At testing time, no 24-bit 68020 PDS (processordirect slot) cards were available for the NuBus-less LC — and because it uses a Motorola 68020 CPU, the LC can't accept existing 68030 PDS cards designed for the SE/30.

### RGB Roundup

For this report, we subjected 20 color display systems to MacUser Labs' full suite of benchmark tests. We tested complete systems, but many cards and monitors are available as individual components. For example, we tested



performance. The 13-inch AppleColor Hi-Res RGB Display used with the Macintosh Display Card 8-24 or 8-24 gc showed the advantage that small screens have in convergence testing.

### MTF Sharpness:

We compared two on-screen areas - one filled with closely spaced, one-pixel-wide white lines and the other filled with wide, alternating black and white bands. The overall brightness in both areas is nearly equal on a screen with high MTF sharpness, which produces easy-to-read text and fine detail. Generally, MTF scores greater than 50 percent are considered acceptable - only one display system, the RasterOps 24L, failed to exceed this mark.

### Color Tracking:

Even the least expensive monitors had good color tracking, providing reliable color at any brightness level. A system with poor color tracking might display a greenish tint in what should be a simple gray square. For accurate color rendition, stick to sharp monitors with excellent color tracking, convergence, and focus, and look into the color-calibration options from Radius or SuperMac.

### Maximum Usable Brightness:

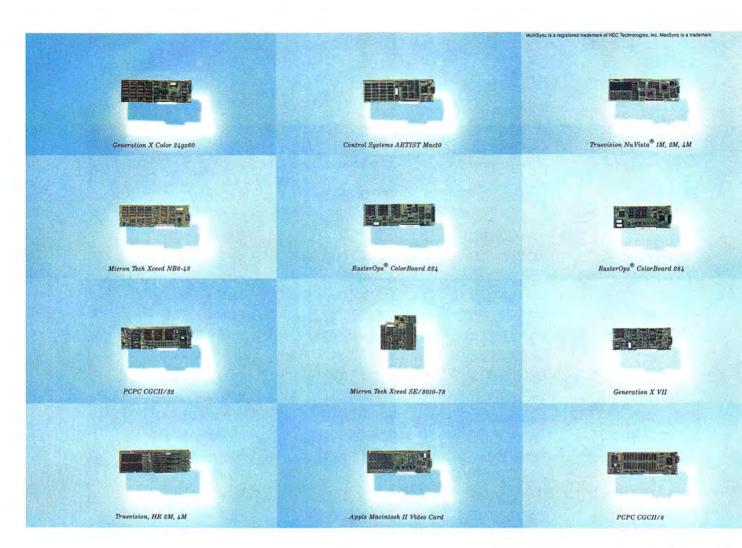
A bright screen combats glare, is easier to read for extended periods, and allows for high contrast. We determined the maximum brightness possible without unacceptable loss of sharp focus.

the Seiko Instruments 14" Color monitor bundled with the RasterOps 264 card, and many of the systems include the National Semiconductor Mac-Langelo card. We also tested two video cards from Apple: the Macintosh Display Card 8.24 and the accelerated

Macintosh Display Card 8.24 gc (both tested with the 13-inch AppleColor Hi-Res RGB Display).

Last year the E-Machines ColorPage T16 with an 8-bit card was one of our top picks; it now looks even better as a 24-bit display. In addition to the T16,

we tested three other systems with 16-inch Sony Trinitron tubes: the E-Machines TX/24, the MegaGraphics 2024 16", and the PCPC II 16" Color. The new Ikegami/Sony Trinitron 19inch and 20-inch monitors were also well represented. Relax Technology



### All major

Not an unusual claim for a 4-star restaurant. But for a monitor, it's quite a story With NEC's multiple-frequency technology, our monitors can accept all kinds of video cards for applications ranging from standard desktop software to large-screen graphics design. And your NEC dealer has several different Macintosh-compatible MultiSync® monitors he'd be glad to show you. In fact, he might even take plastic.

MultiSync GS2A Superior grayscale monitor, 14" flat-surface screen. Supports the Macintosh II video card and compatibles. Ideal for desktop publishing.



MacSync™ Series Designed exclusively for Macintosh II video card and compatibles. Available in both non-glare and new high-contrast 14" screens.





### cards accepted.

MultiSync 3D Supports Macintosh II card and compatibles. Advanced microprocessor digital controls. 14" screen. Perfect for multimedia applications.



MultiSync 4D Resolution from standard Macintosh II card, 800 x 600, up to 1024 x 768. Choose your own dpi on a 16" screen. Microprocessor digital controls.



MultiSync 5D Resolution from Mac
II card and compatibles up to 1280 x
1024 on a 20" screen for graphics
design. Microprocessor digital
controls.





### The LC Option



The low-cost Mac LC with the new 12" RGB Display can provide sharp 16-bit color.

If you need a true-color Mac but can't afford a llci or one with a larger display system, take a serious look at the Macintosh LC, the lowest-cost color Mac. Although the LC can't support true 24-bit color, Apple's optional \$199 VRAM SIMM brings it to 16 bits per pixel close enough that most users won't miss the extra precision and smoothness that 24-bit color provides. With 16-bit color, three 5-bit channels provide 32,768 colors. The other bit is left for developers to add such niceties as transparency. When combined with the Macintosh 12" RGB Display, the optional VRAM SIMM, 2 megabytes of RAM, and a 40-megabyte hard drive, the LC becomes a complete 16-bit system for a list price of about \$3,300 - that's \$2,250 less than a 24-bit IIsi system. You could buy two Mac Classics with the money you save!

In our benchmark examination, the new Mac 12" RGB Display performed nearly as well as the 13-inch AppleColor Hi-Res RGB Display in most tests and proved superior in brightness and MTF sharpness. Convergence, however, was not as good as with the more expensive AppleColor. For those who can live with its lower 512-x-384-pixel, 64-dpi resolution, the 12-inch display, when coupled with the Mac LC and the 512K VRAM SIMM, delivers an inexpensive lowend almost-true-color system.

- Jeff Pittelkau

submitted a 20-inch Ikegami monitor (not the Trinitron model tested last year and still sold by Relax). There were six 19-inch Sony Trinitron systems from E-Machines, Mega-Graphics, Radius, RasterOps, Sigma Designs, and SuperMac. SuperMac also sent us two systems with Hitachi monitors for testing.

Four of the tested systems — the Apple Display 8.24 GC, the SuperMac (Sony) 19", the SuperMac (Hitachi) 19", and the SuperMac (Hitachi) 21" - offer video cards with built-in accelerators. QuickDraw acceleration, now a sometimes-expensive option, should become standard in future 24bit systems (see the "On the Horizon" sidebar).

### Do I Really Need It?

If you're using color in the graphic arts or multimedia, then you should investigate 24-bit display. If you're now limited to 8-bit color, you probably often see "banding" (or "steps") in color images — instead of making smooth transitions, colors jump abruptly from one shade to the next.

If all you do is word processing and spreadsheet work, then stick with

monochrome or gray-scale systems; they're cheaper and display a sharper image. And if you do make the move up to 24-bit-color programs, make sure you have the disk storage and RAM to deal with enormous data files (see "Portable Secure Unlimited-Storage Cartridge Drives," February '91, page 206, and "Maximum Movable Megabytes: Erasable Optical Drives," November '90, page 102). Images created in 24-bit color usually require three times the disk space as 8-bitcolor images of the same size.

If you work in a fast-paced graphicsproduction environment and your Mac would benefit from OuickDraw acceleration, then go for a 24-bit system that at least allows this as an upgrade option. As screen size and the number of pixels increase, 24-bit color costs time as well as money (see the "Acceleration" sidebar).

### What Will It Cost?

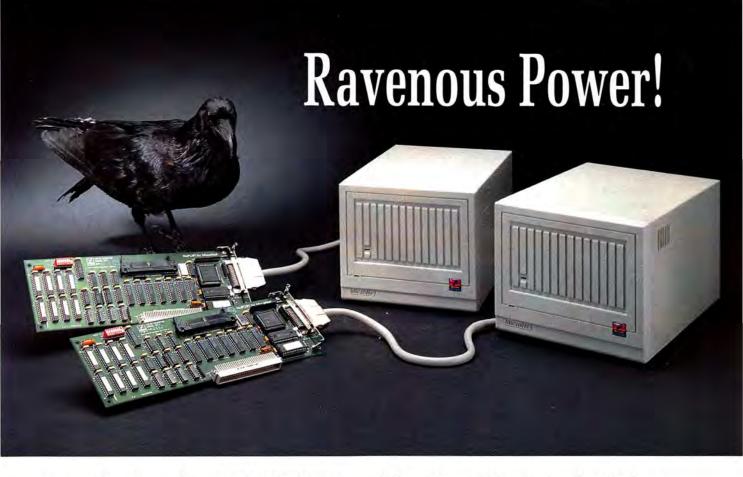
The list price for display systems we tested ranged from \$1,644 (for the Seiko Instruments 14" Color) to \$9,148 (for the MegaGraphics 2024 19"); street prices were considerably lower (see Table 1). Depending on features and built-in acceleration, the 24-bit-video card accounts for between 30 and more than 50 percent of the total price of a display system.

All the monitors we tested can display up to 16,777,216 colors. In fact, most monitors capable of displaying 8-bitcolor can also display 24-bitcolor and should cost the same; the video card is the only element that raises the price. If you want to upgrade an 8-bit system, you should only have to install appropriate software and a new or upgraded video card in your Mac.

Some card manufacturers (such as SuperMac and Mirror) accept tradeins or perform reasonably priced upgrades on their older 8-bit cards. As this article goes to press, Apple, Mirror Technologies, and RasterOps offer 8-bit cards as well as do-it-yourself kits for 24-bit upgrades - more companies are sure to follow suit. E-Machines offers a MoreCare option, which allows you to trade in your 8-bit card for its original retail value.

### **How Quick Can You Draw?**

One advantage of color on the Mac is that you can easily change the display's bit depth — the number of



# Introducing the RAVEN Series. The First Macintosh Disk Array With 5.7 ms Average Access and 4.1 MB/sec Sustained Transfers.

You may be wondering just how fast 4.1 MBytes per second really is. Well here's the bottom line--the RAVEN is so fast, you can now accomplish I/O intensive applications such as animation and graphic design, three times faster than you've ever been able to before! We're not talking about small cache bursts here, but real honest to goodness sustained data transfers.

The RAVEN also gives you incredible disk array power. MicroNet starts with a pair of high speed spindle hard disk drives. Then we maximize the Macintosh NuBus by connecting them in parallel to a pair of MicroNet NuPORT, SCSI-2, synchronous host adapters. What we've created is a very powerful 16-bit disk array subsystem. Capacities range from 606 to 2,500 MB with average access times as

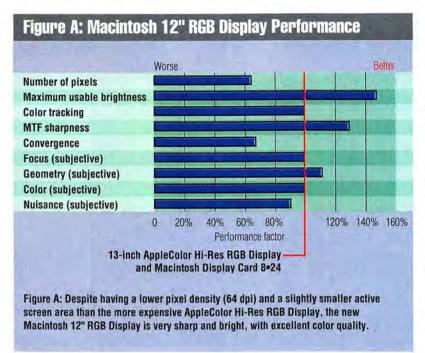
fast as 5.7 ms. The RAVEN also makes fault tolerant RAID technology possible for the Macintosh II family, ensuring real-time data integrity.

By now you're probably wondering what else the RAVEN and our other unique SCSI storage products can offer you. Give us a call today. We'd love to tell you all about our RAVENous storage systems. 1-714-837-6033.



### MicroNet Technology, Inc.

20 MASON • IRVINE, CALIFORNIA • TEL: (714) 837-6033 • FAX: (714) 837-1164 AppleLink: D1656 • Compuserve: 76004,1611



bits per pixel, which determines the number of displayable colors. If the bit depth is 1, you're limited to black or white (two displayable "colors") but screen updates happen fast. The greater the bit depth, the more processing time is needed to "paint" the screen. Also, the NuBus can transfer only 32 bits of data at a time — thirty-two 1-bit pixels in the same amount of time as four 8bit pixels or one 32-bit pixel (which has 24 bits of color information).

Assuming that your software program and your current project can use different bit depths, you can tip the balance between image quality and speed by using the Monitors cdev (or the shareware Fkey Switcheroo, available on Zmac) to select a shallower bit depth. If 24-bit mode is too slow. downshift to 16 or even 8 bits, do your editing, and then return to 24 bits for a final look. Only the E-Machines ColorPage T16, T19, and TX/24 and the Radius DirectColor/24 allow 16bit mode — which is a shame, because it's faster than 24-bit mode yet rarely looks noticeably different.

Another advantage of the Mac is that you can use more than one display system simultaneously. If you already have an unaccelerated 24-bit-video card that supports NuBus block transfer (which lets video data move in big, fast chunks), then an accelerator card that uses this feature—such as Apple's state-of-the-art 8.24 GC - can improve the performance of both the monitor attached to the unaccelerated card and the monitor driven by the accelerated card. Some accelerators are also capable of acting as a bus master, able to take control of NuBus traffic — which also helps accelerate multiple displays. However, our testing showed that on-board acceleration in a video card is best, speeding up screen redraw as much as eightfold over a standard card.

### One Size Does Not Fit All

Displays are measured in dpi (dots, or pixels, per inch). Apple designed the Mac around the traditional point measuring system (72 points equal an inch) used in the printing industry. The closer a Mac display's resolution is to 72 dpi, the more closely a supposedly inch-long object will be to an authentic inch on the screen. A screen with a resolution of exactly 72 dpi is often called WYSIWYG — what you see is

what you get. If a monitor's resolution is higher than 72 dpi, it displays more information on the same-sized screen but text appears shrunken and image sharpness may suffer. However, some graphic artists argue that the more closely packed the pixels in a 24-bitcolor display, the better for previewing artwork, especially photos, because the pixel grid is less visible.

You can calculate the dpi of a monitor by dividing the number of pixels (measured horizontally) by the horizontal size of the active display area. For example, the E-Machines ColorPage T16 displays 832 pixels in 11.75 inches to get 71.7 dpi (close enough to be true WYSIWYG). However, the E-Machines TX/24 and the MegaGraphics 2024 16" cram 1,024 pixels into the same screen area, producing a very dense 88 dpi.

### **Trinitron Challenged**

Of the 20 display systems we tested, 17 use the superb Trinitron technology in monitors either built by or licensed from Sony. However, this technology is being challenged by another Japanese manufacturer: Hitachi now sells 19and 21-inch monitors through various American vendors, including Cal-Comp, Radius, and SuperMac.

What makes the Trinitron tubes so good? They offer three major advantages over conventional shadow-mask tubes (which contain very thin, perforated sheet-metal masks to filter electron beams). First, the Trinitron tube's single-gun, single-lens technology keeps the three electron beams more perfectly aligned within the display tube. Second, a Trinitron tube uses an aperture grille (a flat array of fine, vertically aligned metal wires) that lets more of the electrons strike the screen's interior phosphor coating than does a shadow mask — creating a brighter picture. An aperture grille is also more resistant to doming—distortion caused by heat that results in a blotchy discoloration of the screen image - than is a thicker shadow mask. Third, a Trinitron tube's cylindrical screen reflects less ambient light than does the Dvorak, The Doors Or A Database.



# Chinon's New CD-ROM/Audio Drive Handles Them All Beautifully.

CD's can hold a lot of data in an easy to handle, durable form. They're useful for much more than music. Each CD holds about 600 megabytes of data. That's roughly 250,000 pages of text! With quick and easy access that makes it a snap for you to find what you're looking for, whether your favorite passage of music or information from a large database.

Chinon's new CDA-431 is at the forefront of this new technology. This drive offers one of the fastest access rates anywhere — 350 milliseconds — at a price you will find surprisingly affordable. Use it with your Mac to access huge amounts of information quickly — or hook it up to your audio system to play any kind of music on CD. Chinon's CD Audio-Play software makes it all easy.

Every day there's more software published on CD — reference works, databases, graphics libraries and more — all in a convenient, easy-to-use format that can take a lot of heavy use. The CDA-431 reads any disc written in the "High Sierra" or HFS standard formats, giving you access to a vast library.

"High Sierra" or HFS standard formats, giving you access to a vast library. Experience the CDA-431 for yourself. Call TOLL-FREE for the dealer nearest you, or for more information. Whether for work or play, data or audio, it'll be music to your ears.

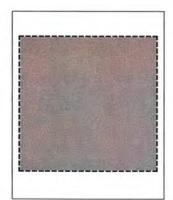


Chinon America, Inc., 660 Maple Avenue, Torrance, CA 90503 Toll-free (800) 441-0222 In Calif. (213) 533-0274

# Ironically, the difference betand the second best ha



Yes, the ColorPoint offers top-notch color. It also offers superior performance in other respects. But the best news of all is the price—\$6,999 for the A (letter) size and \$9,999 for the B (tabloid) size.







ColorPoint is PANTONE\* certified. So it simulates PANTONE colors and greatly simplifies color proofing.

ColorPoint's unique roll-feed, double-cut technology gives you the biggest image size of any comparable printer. Delivered on perfectly trimmed and finished pages. And this same technology also assures you perfect registration every time.

# ween the best color printer s little to do with color.

ColorPoint is 100% Adobe PostScript language compatible, thanks to the PhoenixPage interpreter.



From graphics to fonts, what you get out of the printer is faithful to what

you sent it. What's more, PhoenixPage's advanced screening techniques produce smoother shading and less grainy images. ColorPoint also supports industry standard downloadable typefaces such as Adobe Type 1 fontsincluding hints



Obviously, color is critical. It's why you're looking at color printers in the first place. So rest assured, ColorPoint PS offers the best color around.

But before you decide on a color printer purely on the basis of color, you should take a look at ColorPoint's other advantages as well. The speed. The PostScript compatibility. The perfect registration. The ability to print a full page, both in A and B sizes-even in transparency form.

Then take a look at the price.



Five communication portsparallel, senal, AppleTalk and two SCSI ports-make it easy to connect ColorPoint to Mac, PC, workstation or larger computers. And ColorPoint is easy to share because it will automatically poll the ports. so you don't have to tell it what interface you're using

ColorPoint includes an Intel\* 80960 embedded RISC-based processor that speeds up image-processing time. So you not only get superior 300 dpi quality, you get it as much as 60% faster.



We think you'll find that deciding between ColorPoint and second best is a black and white decision.

To find out more, give us a call at 1-800-873-4561 and ask for department SI-51.



### On the Horizon

As color becomes more popular, you can expect to see price reductions on 24-bit-video boards, color monitors, QuickDraw accelerators, and multipurpose boards (combining acceleration and video goodies). Market leaders such as E-Machines, Radius, Raster-Ops, and SuperMac share Apple's new let's-make-a-deal disposition.

At press time. RasterOps was introducing its new 24si board. combining built-in QuickDraw acceleration, NuBus block transfer, and bus-master operation, plus NTSC/PAL genlock timing for video production. The board has a low power requirement, which conforms to the Mac IIsi. The new 24-bit RasterOps 24STV board incorporates full-motion video, overlay, and capture of NTSC/PAL/SECAM input in a resizable window; optional daughterboards provide acceleration and video compression/decompression. RasterOps, 2500 Walsh Avenue, Santa Clara, CA 95051; (408) 562-4200

E-Machines is releasing two 24-bit Trinitron systems: the 16-inch TXsi and 19-inch T19si, both with boards adapted for the low-power Mac IIsi. But the hot news from E-Machines will be the ColorPage T16/ XL24 system (less than \$4,000) with built-in 24-bit acceleration and hardware-based pan and zoom. E-Machines earned a perfect five mice for the ColorPage T16 system in this report - the accelerated T16/XL24 may be an improvement on perfection. E-Machines, Inc., 9305 S.W. Gemini Drive, Beaverton, OR 97005; (800) 344-7274 or (503) 646-6699

SuperMac has started shipping its 19" Dual-Mode Trinitron Display, which allows you to switch between 1,152 x 870 pixels (two full pages) and a WYSIWYG 1.024 x 768. SuperMac is standardizing on European-standard EBU phosphors (6,500 degrees Kelvin color temperature) on its 19-inch and 21-inch Hitachi monitors. These phosphors produce richer reds and - if accepted as American standards - will advance the cause of international monitor-color accuracy, SuperMac Technology, 485 Potrero Avenue, Sunnyvale, CA 94086; (408) 245-2202.

Radius will offer its DirectColor/24 board with a new Color Display/ 21, a 21-inch Hitachi monitor also using phosphors with a color temperature of 6,500 degrees Kelvin. Radius, Inc., 1710 Fortune Drive, San Jose, CA 95131; (800) 227-2795 or (408) 434-1010.

In addition, CalComp will add acceleration to its Hitachi 21-inch display system. CalComp, Inc., 2411 W. La Palma Avenue, Anaheim, CA 92803; (800) 458-5888 or (714) 821-2000.

- Andrew Eisner and Bruce Mewhinney

usual spherical display.

Hitachi's shadow-mask tubes now rival Trinitron quality in sharpness, brightness, and color saturation. Hitachi has developed a special shadow mask made of the metal alloy Invar (nickel, iron, and manganese), which is highly resistant to doming. The two SuperMac Hitachi monitors were high on our jury's list of favorites and offer sharp pictures with good color.

### **How We Tested**

MacUser Labs has tested hundreds of display systems. Not only do we employ sophisticated instruments to rate them objectively but we also have a unique advantage over average consumers: Our experts get to look at all the systems in one room, with the same lighting and the same experienced eyeballs. This time around, all the tested systems looked good; even the "worst" performer, the Relax Ikegami DM2060, earned a four-mouse rating, because of image quality and low price.

Before we tested each display, we degaussed it to eliminate magnetic interference. We then oriented each monitor along the east/west axis when tuning display tubes before shipment, monitor manufacturers do the same to protect against screen-image

distortion caused by the earth's magnetic field. However, none of the tested monitors seemed particularly sensitive to this subtle force.

After each display had warmed up, we measured its active area — the portion of the screen that contains the actual image. Although manufacturers define screen size as the diagonal measurement of the tube's entire visible front surface, as framed by the plastic-case bezel, the active area is usually smaller and rarely includes the screen's troublesome perimeter where accurate focus and color convergence are difficult to achieve.

### **Brightness Versus Focus**

An eternal conflict in monitor design is between screen brightness and focus. The more you turn up the brightness, the more intense the electron beams that scan across the screen's phosphor. The more intense the beams, the less precise their focus.

We used a Minolta TV Analyzer to measure maximum usable screen brightness (see Figure 1). To their credit, all the displays we tested were still in good focus at an acceptable brightness. Some vendors let you crank the brightness way up so that when the screen's phosphors age and become less responsive, you can energize them to maintain normal luminance. But whatever their age, phosphors deteriorate much more rapidly if brightness is kept too high (or if a screen-saver utility doesn't always blank out the screen when the monitor is left idle).

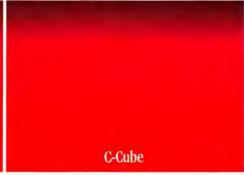
External controls are often provided for monitor brightness and contrast, vertical and horizontal convergence, screen-image position and size, and degaussing. Buying a monitor with all or most of these controls lets you finetune the screen image safely, even after the monitor has accumulated some mileage. The interior electrical components of computer monitors (even after power has been shut off) retain lethal electrical charges. Leave internal tinkering to the experts!

### Sharpness and Glare

MacUser Labs quantifies MTF (modulation-transfer function) — an objective measure of monitor sharpness — by using a custom-built CCD (charge-coupled device) array to compare the brightness of a series of wide white bands with that of a series of thin (one-pixel-wide) white lines. A sharp monitor delivers the same overall brightness in the area with wide bands as in the area with narrow lines. A

# The difference between our ession soluti





There's a big difference between our high performance compression/decompression solution and C-Cube's — ours is available now.

And that's not the only difference.

The Micron Xceed™ ICDP-II with Storm Technology's

PicturePress™ software offers a variety of features you can't get
with C-Cube's CL550™-based products. Like fully adjustable compression settings, thumbnail views, software easily upgraded to future IPEG versions, lossless compression and IPEG ++ TM - an exclusive feature that allows you to compress different user-selected parts of the same image at different quality levels.

Now you can compress large files down to 1/80th their original size, saving disk storage space and speeding up transmission time. And you can compress and decompress up to 50 times faster with the PicturePress Accelerator than with software-only solutions.

Like all Micron products, the Xceed ICDP-II is backed by our extended five-year warranty and toll-free, technical support hotline.

So call us at 1-800-642-7661 for more information and the name of your nearest authorized dealer. And find out how. at \$995, the Xceed ICDP-II for the Mac® II family is obviously different, and obviously better.

Features	Micron ICDP-II	C-Cube CL550- Based Card
True JPEG Implementation	Yes	Yes
Upgradable to Future JPEG Versions via Software Updates	Yes	No
• JPEG ++ Support	Yes	No
Thumbnail Views	Yes	No
Lossless Support	Yes	No
<ul> <li>Application Plug-ins (PhotoShop<sup>™</sup>)</li> </ul>	Yes	Yes
<ul> <li>Free Software-Based</li> </ul>		
Decompression Module	Yes	No
60 MIPS Programmable Processor	Yes	No

2805 E. Columbia Rd., Boise, ID 83706 (208) 368-3800

1-800-642-7661 MU911

Please circle 130 on reader service card.

### Color Display Systems

screen that's not so sharp lets the pattern of narrow white and black lines merge slightly, almost becoming a softgray area. The higher the MTF numbers, the better the display's ability to distinguish fine detail. Maintaining sharpness is much easier for a lowresolution monitor than for a tube that's forced to squeeze pixels into a limited active screen area. All the display systems we tested delivered good MTF results, with the razor-sharp standouts being the E-Machines ColorPage T16, the Mirror ProView/24, and the SuperMac (Sony) 19".

Another trade-off in monitor design is between glare protection and sharpness. Anything you put onto the face of the tube to reduce glare allows less light to be transmitted and may lower sharpness. If you turn the brightness up to compensate, the image will lose its sharp focus. The best — and most expensive — antiglare treatment comes from OCLI (Optical Coating Laboratories, Inc.), with some close competition provided by Asahi Glass' antireflection treatment. The distinctive appearance of OCLI's treatment, apart from a nearly complete absence of screen reflections, includes dramatically enhanced fingerprints (a soft, clean, lint-free cloth and distilled water eliminates these).

The silica-coating antiglare treatment used on two of the E-Machines monitors is surprisingly good. Silica is less costly than OCLI's coating. It works by simply diffusing reflected

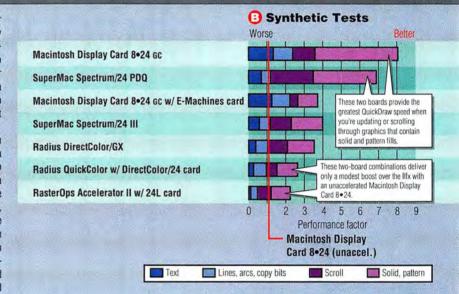
### **Acceleration**

Without a QuickDraw accelerator, your Mac's CPU has to manage both the display screen and the execution of all your keyboard and mouse commands - not to mention all the processing needs of your application. In these slow circumstances, a 24-bit-display board merely stores video data and translates it into the signals that light up vour screen.

If, however, the video board has built-in QuickDraw acceleration or works with a separate accelerator board, then it can help whenever an application sends the Mac a QuickDraw call. Instead of waiting for the CPU to send a finished 24-bit-color image, the accelerated video board gets just a terse description (via NuBus) of how the screen should be updated. The accelerator then zips through the 24-bit dirty work of recalculating color pixels. Some accelerated boards (such as the Macintosh Display Card 8-24 gc) also have bus-master capability taking control of their own or other boards' NuBus traffic during the transfer of video data

Using a standard window of 640 x 480 pixels, we performed our testing of QuickDraw acceleration on a Mac IIfx - all the accelerators had to work hard just to stay ahead of this fast platform. The unaccelerated Macintosh Display Card 8-24 served as our baseline. Synthetic tests analyzed specific QuickDraw calls (see Figure B), and real-world tests compared common applications (see Figure C).

With the plain Macintosh Display Card 8.24, the 40-megahertz 68030 CPU on the Mac Iffx can keep up with the RasterOps Accelerator II (which handles only some QuickDraw calls). By the time you read this, RasterOps will have introduced the 24si, an



### **Table A: Features of Accelerators**

	Apple Macintosh Display Card 8•24 cc	Apple Macintosh Display Card 8•24 cc with E-Machines Video Card
List price	\$1,999	\$1,999 + \$2,995
Street price	\$1,410	\$1,410 + \$2,200
NuBus slots required	1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1	2
Maximum power draw, watts	20 W	20 + 9.5 W
RAM on color board	2 MB	2 MB (E-Machines)
RAM SIMM slots	2	0 (E-Machines)
GWorld support	yes	yes (Apple)
NuBus block transfer	yes	yes
Large monitors, 24-bit	via other boards	16-, 19-inch
Bus master	yes	yes (Apple)

light and usually reduces a screen's apparent sharpness — which becomes a problem for high-resolution monitors. To minimize glare from any monitor screen, orient the display so that it doesn't face fluorescent lights or bright windows.

### **Convergence and Color Tracking**

The hues generated by any color monitor come from rows of fine dots (or thin lines) of internal phosphor coating - actually three different

phosphor blends that separately create red, green, and blue. These dots are repeatedly excited by three identical colorless beams of electrons. If these beams stray from their intended paths across the phosphor coating, you get misconvergence — a rainbow outline around on-screen objects.

If a monitor has external convergence controls or if you have access to a skilled technician, then misconvergence won't be a problem - one reason why it pays to buy from a

reputable dealer. Nearly all the monitors we tested had acceptable misconvergence levels, but the Relax Ikegami DM2060 and the PCPC II 19" Color could stand improvement.

Color tracking is a measure of how well all three electron beams deliver exactly the same intensity on-screen (see the "Color Tracking and Gray Linearity" sidebar). Furthermore, if a monitor always displays gray objects in the correct shade between black and white, the monitor has perfect gray

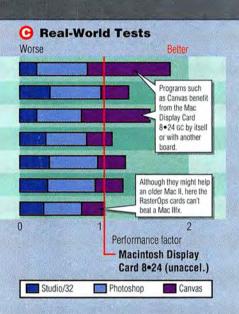


Figure B: On a fast Mac IIfx with 8 megabytes of RAM, any QuickDraw acceleration must be substantial just to beat the IIfx itself. Our speed tests included precise measurement of isolated QuickDraw functions: text, lines, arcs, copy bits, scroll, solid, and pattern. Potential overall acceleration ranged from a low of 120 percent to a high of 700 percent (the Macintosh Display Card 8-24 gc by itself).

Figure C: In actual use, a QuickDraw accelerator is only one of several factors governing a Mac display's speed. We tested each one- or two-board configuration with the bit-map programs Studio/32 and Photoshop and then with the drawing program Canvas (which uses QuickDraw frequently). Actual acceleration varies, depending on the application.

accelerated video board that may rival other single-board products from Apple, Radius, and SuperMac.

If you have a Macintosh II, consider Apple's Ilfx upgrade (which earned five mice in our August '90 lab report on accelerators, "Chasing the IIfx: Accelerators," page 84) instead of the slower QuickDraw accelerators. Overall, the Macintosh Display Card 8.24 gc is the fastest - and the best value if you already have an unaccelerated 24-bit-video board for a color display. The SuperMac Spectrum/24 PDQ is the way to go if you need fast 24-bit performance and will be buying a complete large-monitor system. Be sure to match the specific needs of your favorite programs to an accelerator with the appropriate features and available memory.

Steve Smith

RasterOps Accelerator II with 24L Video Card	Radius QuickColor with DirectColor/24 Video Card	Radius DirectColor/GX	SuperMac Spectrum/24 III	SuperMac Spectrum/24 PDQ
\$495 + \$3,995	\$595 + \$3,595	\$1,095	\$2,999	\$3,999
\$375 + \$2,756	\$446 + \$2,444	\$760	\$1,949	\$2,679
2	2	i i i i i i i i i i i i i i i i i i i	1	1
10 + 7.5 W	8.5 + 20 W	10 W	19 W	17 W
3 MB	3 MB	1 MB	3 MB	3 MB
4 (24L)	0 (DirectColor/24)	0	0	0
yes	no	по	no	no
yes	yes	yes	no	no
16-, 19-inch	19-, 21-inch	none	19-inch	19-, 21-inch
yes	no	no	no	no

linearity as well as perfect color tracking. We measured color tracking and gray linearity with our Minolta TV Analyzer, looking for any differences between measured red, green, and blue intensity on-screen versus what the Mac intended. All the monitors showed good color tracking.

### **Nuisance Notes**

Video cards may look similar, but different engineering approaches can result in differences in bandwidth, stability, and versatility. We evaluated monitors for nuisances associated with card design - such as flicker, jitter, and noise. We're happy to report that none of the systems displayed any nuisance worth noting.

Flicker, which is most perceptible in peripheral vision and is thus a problem with large-screen monitors, was almost nonexistent on the displays we tested. All the cards, except the card provided with the PCPC II 19" Color, had a

vertical-scan (refresh) rate greater than 65 hertz, and most have settled on the 75-hertz standard — where flicker is nearly imperceptible.

### Software

Radius created some of the first screen-utility software and continues to sell what many users consider the most-versatile software on the market. However, other vendors now offer software with similar goodies: tear-off or expanded menus, enlarged cursors, screen savers, and panning (the entire screen acts like a sliding window over an oversized "virtual screen") and zooming (enlargement/reduction). The extra memory available on video cards means that some systems let you create amazingly large virtual screens if you're not in 24-bit-color mode. To provide similar functionality, PCPC bundles Berkeley Systems' Stepping Out II software with its systems, but this software approach is not as fast or

### Feature-Table Criteria

List price (system) - The vendor's suggested prices for a complete system (monitor, NuBus board, cables, software), for the monitor only, and for the board only.

Street price (system) — The complete system price at dealers surveyed across the U.S. in early February 1991 or through mail order.

Tube type, phosphor — The monitor tube's OEM and the phosphor coating selected for the screen.

Overall/active screen size - The distance from one corner to the opposite corner on the exposed glass face of the monitor (overall) and the same distance for the actual screen image

Active screen area — The width and height of the actual screen image.

Screen dimensions - The number of dots (pixels) displayed on the screen, counting horizontally and vertically.

Screen resolution - The number of pixels per inch, measured horizontally. Color modes - The number of potential different screen colors available at different bit depths.

Vert.-scan rate - Also called the refresh rate. How fast, in cycles per second (hertz), the screen is redrawn from top to bottom; 65 hertz is considered sufficient to eliminate flicker.

Horiz.-scan rate - How many lines of pixels can be written on the screen per second, in thousands.

Bandwidth — A factor governing the speed with which monitors can switch electron beams on and off. Monitors with high pixel density need high bandwidth to maintain sharpness.

Power consumption — The separate electrical-power requirements (in watts) of the monitor and the video board.

Antiglare treatment - A coating or transparent panel on the monitor screen designed to eliminate or diffuse reflected

Controls - Monitors can have external dials or buttons to adjust screen brightness, contrast, vertical and horizontal position and size of the image, degaussing, and vertical and horizontal convergence

Case (W x H x D, in.) - In inches, the outside width, height, and depth of the monitor's plastic shell

Software - 24-bit systems often come with special hardware capabilities or bundled software.

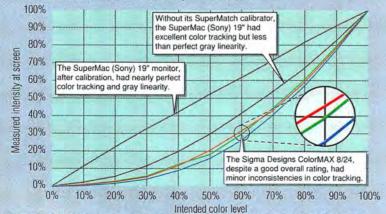
NuBus block transfer - To speed up monitor screen updates, some video and accelerator boards can transfer QuickDraw information in large blocks.

### **Color Tracking and Gray Linearity**

Color tracking is a measure of the equal strength of each of the three colors that make up a monitor's image - red, green, and blue (RGB). Gray linearity is a measure of the equal increase of these colors as color density increases. Perfect RGB color tracking and gray linearity is shown by the straight line, plotted from lower left to upper right, that represents the color tracking on the SuperMac (Sony) 19", after gamma correction and verification with its optional SuperMatch calibrator. Good color tracking

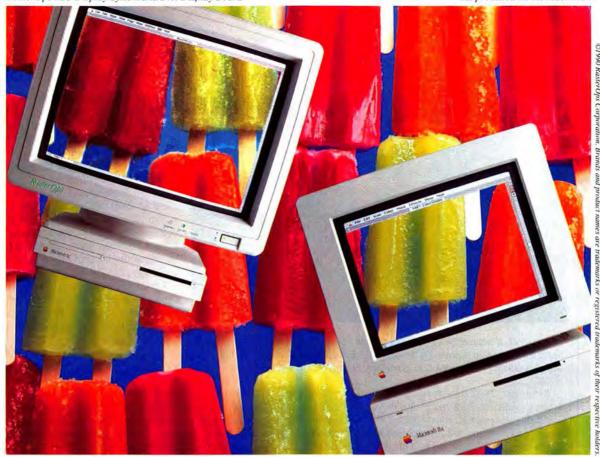
but imperfect gray linearity (a common situation) is seen in the uncorrected SuperMac (Sony) 19", represented by the single curved line directly below the SuperMatch-adjusted plot.

A monitor with imperfect gray linearity as well as imperfect color tracking (represented by the separate red, green, and blue lines at the bottom of the chart, obtained from tests on a Sigma Designs ColorMAX 8/ 24) suffers from color imbalance and unreliable contrast.



RasterOps 8LC Display System and 24si Display Board

Ad produced on the Macintosh



### INTRODUCING THE COOLEST NEW DISPLAY SYSTEMS FOR THE HOTTEST NEW MACINTOSHES.

Every time a hot new Macintosh® computer is

announced, we're out there first with the coolest technology in display systems.

We custom design our VLSI chips and use surface mount technology to create display systems that are smaller, smarter and so power efficient they run at temperatures cooler than Apple's recommended standards. That means your computer will live a longer life.

But technology isn't the only area where RasterOps boards are cool. Consider our new display systems.

For the Macintosh IIsi, we present the 24si board. It's a single slot board



Our 24si board delivers 24-bit True Color with built on acceleration to the Macintosh IIsi.

with built on acceleration that brings brilliant 24-bit color to any Apple 13" monitor up to 600 times faster than before.

For the Macintosh LC, the ClearVue/LC is an unbeatable monochrome system. The ClearVue/GSLC

brings you the highest resolution gray scale. The 8LC display system puts 256 brilliant colors at your fingertips. And the affordable ClearVue/LC Monochrome and ClearVue/GSLC display boards bring high image clarity to the

15" Apple Portrait Display.

So see your RasterOps dealer or call 800.468.7600. And be prepared for chills to run down your spine.



THE ART & SCIENCE OF COLOR™



VIDEO COLORBOARD 364 · TV TUNER · PROVIDEO 32 · VIDEO EXPANDER · FRAMEGRABBER 324NC · ACCELERATOR · 8S/24S DISPLAY BOARDS

Our new 19" display

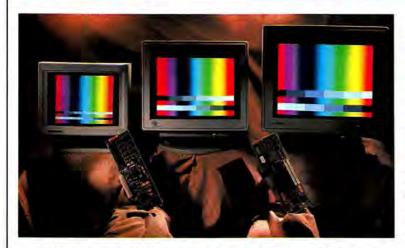
systems bring 8-bit

color, as well as mono-

chrome and gray scale,

to the Macintosh LC.

### The Bottom Line



Professional, affordable 24-bit color is available from these winners (clockwise from upper left): the Seiko Instruments 14" Color, the E-Machines ColorPage T16, the SuperMac (Sony) 19", and the Macintosh Display Card 8-24 cc and 8-24.

A true-color, 24-bit-color display system should provide a crisp, accurate rendering of scanned photos or Mac-generated artwork. This basic requirement is certainly met by the 20 systems we tested: Among the 17 Trinitron- and 2 Hitachi-tube monitors as well as the 1 with the Ikegami shadow-mask tube (from Relax), there isn't a bad display package in the bunch.

We're the most impressed by all the systems from E-Machines,

especially the E-Machines ColorPage T16 (\$5,190) - our overall pick. It provides professional 24-bit quality at an attractive price. The E-Machines TX/24 (\$5,190) was also of superior quality, despite its non-WYSIWYG high dot density. Other good 16-inch Trinitrons come from PCPC and MegaGraphics.

For the budget-minded, the Seiko Instruments 14" Color system (\$1,644) offers great performance at very affordable street prices; we only wish that its video board supported 16bit color and NuBus block transfer. Either the Macintosh Display Card 8-24 or the Macintosh Display Card 8-24 gc (accelerated) board is a great buy with Apple's small but razorsharp 13-inch AppleColor Hi-Res RGB Display (system list \$1,798 and \$2,998, respectively). The 8.24 gc board is by far the fastest video board we tested.

We thought the Mirror ProView/24 (\$3,997). a 19-inch Ikegami Trinitron with excellent software, was a real bargain. Another system with

matching quality and street price was the sharp SuperMac (Sony) 19" (\$7,199). For high-end graphics, you should take a look at the SuperMac (Hitachi) 21" (\$8,399). A top-quality monitor, acceleration, and the optional calibration hardware/software make this a very desirable package. SuperMac's just-released 19" Dual-Mode Trinitron Display (see the "On the Horizon" sidebar) should also appeal to graphics pros.

smooth as having hardware-based virtual screens. The QuickDraw GWorld environment, implemented only on the Macintosh Display Card 8.24 gc and the RasterOps Accelerator II, allows huge, fast virtual screens but demands substantial memory on the accelerator card.

With its ProView/24 system, Mirror Technologies bundles Desktop Designer Pro, which allows customizable pop-up menus; a screen saver; screenimage capture; enlarged cursor and menus; and a Stroke function, which automatically pops up a preselected menu in response to a preprogrammed mouse action.

If you will be doing graphics work that requires extremely accurate color display, take the time to research the calibration and gamma-correction options available from different system vendors (see "Color Calibration" and "In Living Color," May '90, Buyer's

Guide pages 15 and 32, respectively, and "True Colors," March '90, page 233).

### Who's the Fairest of Them All?

As much as we like to pick out only the best and leave the rest, we liked all the display systems. Our general impression is that buyers can't go wrong with any of these products - although several are especially good for specific tasks. Dividing them roughly into groups, first are the small 13- and 14inch Trinitron monitors, which cost less than \$2,000, including a 24-bit card. Next come the 16-inch Trinitrons, which cost you another grand or two; these offer a little more usable screen area (and if you can live with a compressed dot density, a lot more information on-screen). Then come the excellent 19- and 20-inch Trinitrons from Sony or Ikegami. The attractively priced Relax Ikegami DM2060

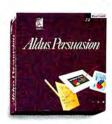
20" monitor scored lowest, but that's in a field of winners. Relax also sells an Ikegami/Sony 19" Trinitron.

If you still demand the original 19" Sony Trinitron, you'll find good ones (see the "Bottom Line" sidebar). However, for serious graphic artists, we also suggest a look at the new 19and 21-inch Hitachi monitors sold by SuperMac (and soon by Radius and others). If your budget allows, consider either the Radius PrecisionColor or the SuperMac SuperMatch calibration systems and be prepared to spend the extra bucks for an accelerated video card. A fast state-of-the-art color display system may cost several thousand dollars, but you'll end up with something that's easy on your eyes, accurate, and highly productive.

Andrew Eisner, director of MacUser Labs, occasionally suffers from misconvergence but has never been known to flicker.



# NO ONE HAS TO KNOW YOU DID ALLTHIS MINUTES BEFORE THE MEETING.



The meeting is in an hour. And your presentation is the main event. It's in your head, but not on paper —much less on

overheads. It's important to communicate professionally and persuasively, but there's not enough time to prepare.

Or is there?

### Persuasion: first choice for last minute.

Aldus® Persuasion™ 2.0 is the fastest way to create impressive visuals for all your meetings. In fact, all the overheads above were created in just 30 minutes. That's productivity no other

method or Macintosh® program can beat—and test results prove it.

Simply type text into Aldus Persuasion's outliner, and your visuals are automatically formatted. Persuasion 2.0 is a complete solution for creating organization charts, diagrams, and a variety of graphs, with features like 36 pre-designed templates, spell-checking, and a

library of clip art. So all you provide is the content— Persuasion does the rest.

And when you're ready to print, choose from output options to suit your needs: black-and-white or color overheads, or 35mm slides from a film recorder or nationwide service bureaus.

Of Persuasion's many accolades, MacWeek summed it up best: "...the best presentation package available."

Need more persuasion? Call **800-333-2538**, **Department 3D3**, for free literature or a \$4.95 demo disk.\* Because with Aldus Persuasion 2.0, your presentations will look like you spent days, not minutes. And we'll never tell.



In a recent performance test, Persuasion outpaced other Macintosh programs.



The Creative Edge in Business.



of the Company of the Company	ures of Color Display Systems						
	Apple Display 8•24	Apple Display 8•24 cc	E-Machines ColorPage T16	E-Machines T19	E-Machines TX/24 \$\$\$\$1/2		
List price (system)	\$1,798	\$2,998	\$5,190	\$7,390	\$5,190		
Monitor only Board only (NuBus)	\$999 (AppleColor) \$799	\$999 (AppleColor) \$1,999	\$1,995 \$3,195	\$4,195 \$3,195	\$1,995 \$3,195		
0	2110						
Street price (system)	\$1,448	\$2,098	\$4,150	\$5,400	\$4,150		
Pros	High quality. Sharp. Affordable,	Highest QuickDraw speed. Versatile.	Nearly perfect color. Sharp focus. Great value.	Sharp screen image. Good 39-page manual.	High resolution. Bright. Good manual.		
Cons	Small screen. No glare protection.	Small screen. No glare protection.	No OCLI glare protection.	Slight streaking at bottom of active area.	Not WYSIWYG.		
Monitor specifications							
Tube type, phosphor	Sony Trinitron, P22	Sony Trinitron, P22	Sony Trinitron, P22	Sony Trinitron, P22	Sony Trinitron, P22		
Overall/active screen	13-/11.5-in. diag.	13-/11.5-in. diag.	16-/14.5-in. diag.	19-/17.25-in. diag.	16-/15-in. diag.		
Active screen area	9.5 x 7 in.	9.5 x 7 in.	11.75 x 8.75 in.	13.5 x 10.75 in.	11.75 x 9.25 in.		
Screen dimensions	640 x 480 pixels	640 x 480 pixels	832 x 624 pixels	1,024 x 808 pixels	1,024 x 808 pixels		
Screen resolution	69 dpi	69 dpi	72 dpi	76 dpi	87 dpi		
Color modes	2/4/16/256/mill.	2/4/16/256/mill.	2/4/16/256/thou./mill.	2/4/16/256/thou./mill.	2/4/16/256/thou./mill.		
Vertscan rate	66.7 Hz	66.7 Hz	66.9 Hz	71.3 Hz	72 Hz		
Horizscan rate	35 kHz	35 kHz	44.9 kHz	60.2 kHz	60 kHz		
Bandwidth	23 MHz	23 MHz	100 MHz	100 MHz	100 MHz		
Power consumption	160 W; board, 7 W	160 W; board, 20 W	253 W; board, 9.5 W	286 W; board, 9.5 W	264 W; board, 9.5 W		
Antiglare treatment	none	none	silica coating	OCLI	silica coating		
Controls Brightness/contrast	side/side	side/side	internal/front	internal/front	internal/front		
Vert. position/size	rear/rear	rear/rear	front/internal	front/internal	front/internal		
Horiz. position/size	rear/rear	rear/rear	internal/internal	internal/internal	internal/internal		
Degaussing	rear button	rear button	auto at power-up	auto at power-up	auto at power-up		
Vert./horiz. convergence	rear/rear	rear/rear	front/front	front/front	front/front		
Other Case (W x H x D, in.)	13.75 x 11.75 x 15.75	13.75 x 11.75 x 15.75	16 x 15 x 18.75	18.75 x 18.75 x 21	16 x 15 x 18.75		
Weight	34 lb	34 lb	59.4 lb	86 lb	60 lb		
Tilt/swivel stand	optional	optional	yes	yes	yes		
Software	gamma correction	gamma correction, QuickDraw acceleration	brightness/contrast adjust, screen dimmer, big menus	brightness/contrast adjust, screen dimmer, big menus	brightness/contrast adjust, screen dimme big menus		
NuBus block transfer	yes	yes	yes	yes	yes		
Warranty	1 year	1 year	1 year (extendable)	1 year (extendable)	1 year (extendable)		
Company	Apple Computer, Inc.	Apple Computer, Inc.	E-Machines, Inc.	E-Machines, Inc.	E-Machines, Inc.		
	20525 Mariani Ave. Cupertino, CA 95014 (408) 996-1010	20525 Mariani Ave. Cupertino, CA 95014 (408) 996-1010	9305 S.W. Gemini Dr. Beaverton, OR 97005 (800) 344-7274	9305 S.W. Gemini Dr. Beaverton, OR 97005 (800) 344-7274	9305 S.W. Gemini Dr. Beaverton, OR 97005 (800) 344-7274		



Don't use a Mac anywhere without a Kodak Diconix M150 plus printer. Especially now tha it's more affordable than ever!

Just think of all the things you can do if you have a Diconix printer with your Macintosh Portable or Classic computer. Those last-minute improvements on the presentation. The letters and reports that could be on their way right now. And, because it's so small and quiet, it works as well on the desktop as it does on the road.

It's all easy with the Kodak Diconix M150 plus printer. One of the world's smallest, lightest (3.1 lbs.), quietest printers, it's easy to carry. And it prints high-quality outline fonts, using Adobe Type Manager™software,

> and presentation graphics as well. Go ahead, give in to temptation. Call for the name of your nearest dealer in the U.S. or Canada:

1 800 344-0006, Ext. 405.

Macintosh computer and new Kodak Diconix printer

# THE OTHER?

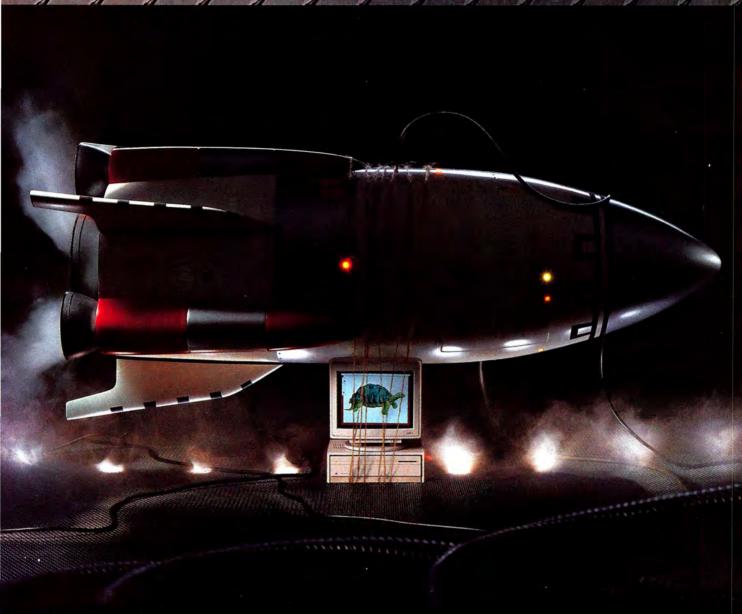
The new vision of Kodak





	Generation Systems Color 24	MegaGraphics 2024 16"	MegaGraphics 2024 19"	Mirror ProView/24	Moniterm Viking C24
List price (system)	\$6,299	\$6,795	\$9,148	\$3,997	\$7,490
Monitor only	NA	\$1,996	\$4,349	NA	\$3,995
Board only (NuBus)	\$2,699	\$4,799	\$4,799	\$1,797	\$3,495
Street price (system)	\$4,095	\$4,999	\$5,995	\$3,997	\$7,490
Pros	Low price. Bright image. Hardware pan/zoom.	Sharp, Good color.	Clear 30-page manual.	Low price. Pan and zoom. Good software.	Pan and zoom. Gamma correction.
				Sharp.	
Cons	Convergence slightly off.	Not WYSIWYG.	Above-average price.	Geometry slightly off.	High price.
Monitor specifications					
Tube type, phosphor	Ikegami Trinitron, P22	Sony Trinitron, P22	Sony Trinitron, P22	Ikegami Trinitron, P22	Ikegami Trinitron, P22
Overall/active screen	20-/17.75-in. diag.	16-/15-in. diag.	19-/17.5-in. diag.	19-/18-in. diag.	20-/18-in. diag.
Active screen area	14.25 x 10.75 in.	11.75 x 9.5 in.	13.75 x 11 in.	14.25 x 10.75 in.	14 x 11 in.
Screen dimensions	1,024 x 768 pixels	1,024 x 826 pixels	1,024 x 826 pixels	1,024 x 768 pixels	1,024 x 768 pixels
Screen resolution	72 dpi	88 dpi	75 dpi	72 dpi	72 dpi
Color modes	2/256/mill.	2/4/16/256/mill.	2/4/16/256/mill.	2/256/mill.	2/256/mill.
Vertscan rate	75 Hz	69 Hz	69 Hz	75 Hz	75 Hz
Horizscan rate	60 kHz	60 kHz	60 kHz	60 kHz	60.24 kHz
Bandwidth	80 MHz	100 MHz	80 MHz	80 MHz	80 MHz
Power consumption	150 W; board, 20 W	253 W; board, 20 W	150 W; board, 20 W	150 W; board, 20 W	150 W; board, 20 W
Antiglare treatment	OCLI OCLI	OCLI	OCLI OCLI	antireflection panel	OCLI
Controls					
	front/front	internal/front	internal/front	front/front	front/front
Brightness/contrast	front/front	internal/front front/internal	internal/front	front/front	front/front
Vert. position/size Horiz. position/size	side/side side/internal	internal/internal	front/internal internal/internal	side/side	side/side
Degaussing	side button	auto at power-up	auto at power-up	side/internal side button	side/internal side button
Vert./horiz. convergence		front/front	front/front	side/side	
	GIGG/SIGE	Homonom	Honorion	Siudraide	side/side
Other	10 10 5 04	10.45.30.70	101004	10 10 05 00 75	101001
Case (W x H x D, in.)	19 x 19.5 x 21	16 x 15 x 18.75	19 x 19 x 21	19 x 19.25 x 20.75	19 x 19 x 21
Weight (pounds)	85 lb	59.4 lb	95 lb	79 lb	90 lb
Tilt/swivel stand	yes	yes	yes assession	yes Dealston Designer Pro	yes
Software	pop-up menus, screen saver & capture, big cursor/menu	gamma correction, pan and zoom	gamma correction, pan and zoom	Desktop Designer Pro, big menu, screen saver, screen capture	gamma correction, pan and zoom
NuBus block transfer	no	no	no	no	no
Warranty	1 year	1 year, 3-year option	1 year, 3-year option	1 year	1 year (extendable)
Company	Generation Systems	MegaGraphics, Inc.	MegaGraphics, Inc.	Mirror Technologies	Moniterm Corp.
	1185-C Bordeaux Dr.	439 Calle San Pablo	439 Calle San Pablo	2644 Patton Rd.	5740 Green Circle Dr.
	Sunnyvale, CA 94089	Camarillo, CA 93012	Camarillo, CA 93012	Roseville, MN 55113	Minnetonka, MN 5534
	(800) 325-5811	(800) 487-6342	(800) 487-6342	(800) 654-5294	(800) 933-5740, info
	(408) 734-2100	(805) 484-3799	(805) 484-3799		(800) 343-4969, supp





# WITH ONE SMALL ADDITION, WE CAN MAKE YOUR MACINTOSH AN ENTIRELY DIFFERENT MACHINE.

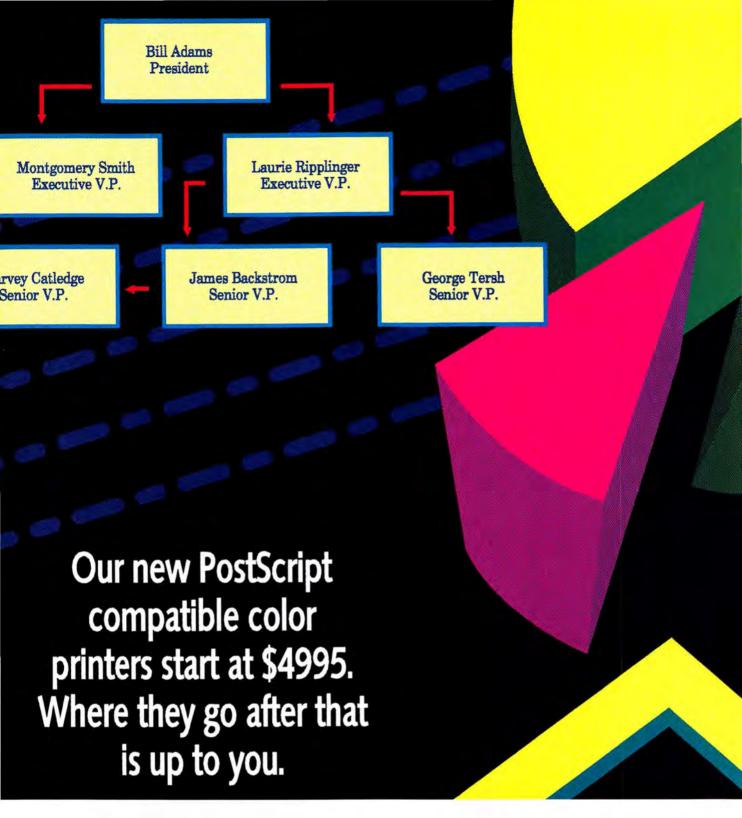
In one fell swoop, Radius has brought Mach 10 speed to Mac II computers. At the center of it all is a powerful, easily installed NuBus accelerator board aptly named the Rocket. The Rocket is fast: up to three times faster than a Mac IIfx, up to six times faster than a regular Mac II, and when matched with a Radius display system, up to 50 times faster with certain applications. The Rocket is smart: multiprocessing enables your Mac motherboard to handle all

input/output operations while the Rocket's Motorola 68040" goes to town. • And the Rocket is powerful: capable of 25 MIPS and 3.6 MFLOPS, the Rocket blows away the Sparcstation I and 486 PC's. And with on-board QuickDraw and display-list processing acceleration for color publishing and CAD/CAM, you'll just have to see it to believe it.

see what it's really like to have the power to be your best.

991 Radius Inc. Radius, the Radius logo, and all Radius products are trademarks of Radius. For the name of a Radius International Distributor, call 1-408-434-1010.

Please circle 141 on reader service card.



Now you can let your imagination run wild. At a very conservative price. Because Tektronix introduces the first color printer that is PostScript-compatible for less than \$5000.

The Phaser II SX is great for individuals or small groups. It works with Windows 3.0 or Macintosh QuickDraw and is software-based PostScript-compatible. It also delivers brilliant 300 dpi ther-

mal-wax color as only Tektronix printers can.

For bigger businesses, we offer the new Phaser II PX. This printer is hardware-based PostScript-compatible with HP-GL and is licensed by Pantone, Inc\*. It also works with Macs, PCs, and UNIX workstations. All at once.

Now, say you buy an SX, your business grows, and you end up wishing you'd gotten the PX. No



need to worry because all Tektronix printers are upgradable so you'll never outgrow them.

And in case you didn't notice, this entire ad was created by one of our printers. That includes the brilliant graphics you see above and the crisp type you're reading now. Because we have so much faith in our color printers, we let them do their own ads. No one else

can make a statement this bold.

Printout for printout, ad for ad, you won't find a better color printer. Call 1-800-835-6100,

Dept. 13A for more information. The rest is up to you.

### **Tektronix**

The best and the brightest.

Please circle 47 on reader service card.



Cons         Stepping Out II.         Out III.         Average price. Not WYSIWYG.         Above-average price. Convergence.         Above-average price. Overwergence.         Uneven focus, convergence.           Monitor specifications         Tube type, phosphor         Sony Trinitron, P22         Kegami Trinitron, P22         Sony Trinitron, P22         Kegami shadow mas           Overall/active screen         16-714.5-in. diag.         19-/17.75-in. diag.         19-/17.75-in. diag.         20-/17.5-in. diag.         10-/17.5-in. diag.         10-/1		PCPC II 16" Color	PCPC II 19" Color	Radius DirectColor/24	RasterOps 24L	Relax Ikegami DM2060
Monitor only   NA   \$3,855   \$4,295   NA   \$3,977		\$\$\$\$%	\$\$\$\$	\$\$\$\$	\$\$\$\$	1111
Monitor only   NA   S3,955   S4,995   S3,995   NA   S3,977	List price (system)	\$3,495	\$4.995	\$7,890	\$8,190	\$5.249
Street price (system)   S3,495   S4,995   S5,250   S8,399   S3,999				\$4.295		
Pros						
Pros						
Inexpensive Includes   Stepping Out II.   Out II.			\$4,995			\$3,999
Monitor specifications	Pros	Inexpensive. Includes	Includes Stepping			Low price for 20-inch monitor.
Tube type, phosphor         Sony Trinitron, P22         Ikegami Trinitron, P22         Sony Trinitron, P22         Ikegami Shadow max Overall/Active screen         18-714.5-in. diag.         19-/17.75-in. diag.         19-/17.75-in. diag.         19-/17.75-in. diag.         20-/17.5-in. diag.         11-25 x 0.5 in.         14 x 10.75 in.         13.5 x 11 in.         14.25 x 10.5 in.         14.2 x 10.5 in.	Cons	Not WYSIWYG.	Some misconvergence.		Above-average price.	
Tube type, phosphor         Sony Trinitron, P22         Ikegami Trinitron, P22         Sony Trinitron, P22         Ikegami Shadow max Overall/Active screen         16-/14.5-in. diag.         19-/17.75-in. diag.         19-/17.75-in. diag.         19-/17.75-in. diag.         20-/17.5-in. diag.         20-/18.5-in. diag.         20-/18.5-in. diag.         20-/18.5-in. diag.         20-/18.5-in. diag.         20-/18.5-in. diag.         20-/18.5-in. diag.         20-/18.5-in	Monitor specifications					
Overall/active screen         18-/14.5-in. diag.         19-/17.75-in. diag.         19-/17.75-in. diag.         20-/17.5-in. diag.         10-25 x 10.5 in.         13.5 x 11 in.         14.25 x 10.5 in.         12.25 x		Sony Trinitron, P22	Ikegami Trinitron, P22	Sony Trinitron, P22	Sony Trinitron, P22	Ikegami shadow mask, Pa
Active screen area   11.75 x 8.75 in.   14.5 x 10.5 in.   14 x 10.75 in.   13.5 x 11 in.   14.25 x 10.5 in.   Screen dimensions   1,024 x 768 pixels   1,0	SECTION OF STREET					
Screen dimensions   1,024 x 768 pixels   1,024 x						
Screen resolution   82 dpi   72 dpi   82 dpi   72 dpi						
Color modes         2/4/16/256/mill.         2/4/16/256/mill.         2/2/16/256/mill.         2/2/16/256/mill.         2/256/thou_/mill.         2/4/16/256/mill.         2/256/mill.         2/256/mill.         2/216/mill.         2/256/mill.				-		
Vertscan rate         75 Hz         60 Hz (75 Hz, Mar.'91)         71 Hz         75 Hz         75 Hz           Horizscan rate         60 kHz         49 kHz (60 kHz, Mar.'91)         65 kHz         60 kHz         60 kHz           Bandwidth         80 MHz         100 MHz         100 MHz         100 MHz         100 MHz           Power consumption         240 W; board, 8.75 W         220 W; board, 20 W         330 W; board, 10.5 W         150 W; board, 20 W           Antiglare treatment         OCLI         OCLI         OCLI         OCLI         OCLI           Controls         Brightness/contrast         internal/front         front/front         internal/front         front/front           Vert. position/size         front/internal         side/side         front/internal         side/side           Horiz, position/size         internal/internal         internal/internal         side/side           Horiz, position/size         auto at power-up         side button         auto at power-up         side button           Vert_/horiz, convergence         front/front         side/side         front/front         front/front         front/front         internal/internal           Other         Sas Ib         85 Ib         85 Ib         85 Ib         84 Ib         85 Ib				A CONTRACTOR OF THE PROPERTY O		
Horizscan rate						
Bandwidth         80 MHz         100 MLz         <						
Power consumption 240 W; board, 8.75 W 220 W; board, 8.75 W 220 W; board, 20 W 330 W; board, 10.5 W 150 W; board, 20 W Antiglare treatment OCLI OCLI OCLI OCLI OCLI OCLI  Controls  Brightness/contrast internal/front front/front internal/front internal/front front/front internal/front front/internal side/side front/internal front/internal side/side front/internal internal/internal side/side internal/internal side/internal side/internal internal/internal internal/internal side/internal side/internal auto at power-up side button auto at power-up auto at power-up side button internal/internal internal/internal internal/internal internal/internal internal/internal internal/internal internal/internal side/internal side/side front/front front/front internal/internal internal/internal internal/internal side/internal side/side internal/internal internal/internal internal/internal side/internal side/internal side/side internal/internal internal/internal internal/internal internal/internal side/internal side/internal internal/internal internal/internal side/internal side/side internal/internal internal/internal internal/internal side/side internal/internal internal/internal internal/internal side/side internal/internal internal/internal side/side internal/internal internal/internal side/side internal/internal interna						
Antiglare treatment         OCLI         OCLI         OCLI         OCLI           Controls         Brightness/contrast         internal/front         front/front         internal/front         internal/front         front/internal           Vert. position/size         front/internal         side/side         front/internal         front/internal         side/side           Horiz. position/size         Internal/internal         side/side         internal/internal         internal/internal         side/side           Horiz. position/size         Internal/internal         side/side         internal/internal         side/side           Horiz. position/size         Internal/internal         side/side         internal/internal         side button           Degaussing         auto at power-up         side button         auto at power-up         side button           Vert./horiz. convergence         front/front         front/front         front/front         front/front         front/front         internal/internal           Other         convertinent         side/side         front/front         front/front<						
Controls Brightness/contrast internal/front front/front internal/front internal/front front/front internal/front internal/front front/internal side/side front/internal front/internal side/side front/internal internal/internal side/internal side/internal internal/internal side/internal side/internal pegaussing auto at power-up side button auto at power-up auto at power-up side button front/front front/front internal/internal internal/internal side/internal side	************					
Brightness/contrast internal/front front/front internal/front front/front vert. position/size front/internal side/side front/internal front/internal side/side front/internal front/internal side/side front/internal internal/internal side/internal side/internal internal/internal internal/internal side/internal pegaussing auto at power-up side button auto at power-up auto at power-up side button vert./horiz. convergence front/front side/side front/front front/front internal/internal pegaussing auto at power-up side button auto at power-up auto at power-up side button internal/internal pegaussing front/front front/front front/front internal/internal pegaussing front/front front/front front/front internal/internal pegaussing front/front front/fr		COC	OOL	OOLI CONTRACTORIO		OOL!
Vert. position/size front/internal side/side front/internal front/internal side/side front/internal internal/internal side/internal pegaussing auto at power-up side button auto at power-up auto at power-up side button front/front front/front front/front internal/internal internal/internal side/internal pegaussing auto at power-up side button auto at power-up side button front/front front/front internal/internal pegaussing front/front side/side front/front front/front front/front internal/internal pegaussing auto at power-up side button auto at power-up side button front/front front/front front/front internal/internal pegaussing front/front front/		1-1	1			
Horiz, position/size Internal/internal side/internal internal/internal internal/internal side/internal side/internal side/internal internal/internal side/internal side/internal auto at power-up auto at power-up side button  Vert./horiz. convergence front/front side/side front/front front/front internal/internal  Other  Case (W x H x D, in.)						
Degaussing auto at power-up side button auto at power-up side button  Vert./horiz. convergence front/front side/side front/front front/front internal/internal  Other  Case (W x H x D, in.)  19 x 19 x 21  19 x 19 x 21  19 x 19 x						
Vert./horiz. convergence         front/front         side/side         front/front         front/front         internal/internal           Other         Case (Wx H x D, in.)         19 x 19 x 21						
Other         Case (W x H x D, in.)         19 x 19 x 21         19 x 19 x 2						
Case (W x H x D, in.)         19 x 19 x 21         19 x		Tront/Tront	SIGE/SIGE	front/front	tront/front	internal/internal
Weight 85 lb						
Tilt/swivel stand yes yes yes yes yes  Software Stepping Out II Stepping Out II tear-off/big menus, gamma-correction DA, (software for (software for pan and zoom) pan and zoom) auto-center dialog pan and zoom adjust  NuBus block transfer no no yes yes no  Warranty 1 year  Company PCPC PCC Radius, Inc. RasterOps Relax Technology 4710 Eisenhower Blvd. Tampa, FL 33634 Tampa, FL 33634 San Jose, CA 95131 Santa Clara, CA 95051 Union City, CA 9458		The state of the s				
Software Stepping Out II Stepping Out II tear-off/big menus, software for (software for pan and zoom) pan and zoom pan and zoom adjust pan and zoo					84 lb	85 lb
(software for pan and zoom) pan and zoom adjust  NuBus block transfer no no yes yes no  Warranty 1 year 1 year 1 year 1 year 1 year 1 year  Company PCPC PCPC Radius, Inc. RasterOps Relax Technology 4710 Eisenhower Blvd. Tampa, FL 33634 Tampa, FL 33634 San Jose, CA 95131 Santa Clara, CA 95051 Union City, CA 9458		Control of the Contro				
pan and zoom) pan and zoom) auto-center dialog pan and zoom adjust  NuBus block transfer no no yes yes no  Warranty 1 year 1 year 1 year 1 year 1 year 1 year  Company PCPC PCPC Radius, Inc. RasterOps Relax Technology 4710 Eisenhower Blvd. 4710 Eisenhower Blvd. Tampa, FL 33634 Tampa, FL 33634 San Jose, CA 95131 Santa Clara, CA 95051 Union City, CA 9458	Software					
NuBus block transfer         no         yes         yes         no           Warranty         1 year         1 year         1 year         1 year         1 year           Company         PCPC         PCPC         Radius, Inc.         RasterOps         Relax Technology           4710 Eisenhower Blvd.         4710 Eisenhower Blvd.         1710 Fortune Dr.         2500 Walsh Ave.         3101 Whipple Rd., #           Tampa, FL 33634         Tampa, FL 33634         San Jose, CA 95131         Santa Clara, CA 95051         Union City, CA 9458				Company of the Compan		pan and zoom
Warranty         1 year         1 year         1 year         1 year         1 year         1 year           Company         PCPC         PCPC         Radius, Inc.         RasterOps         Relax Technology           4710 Eisenhower Blvd.         4710 Eisenhower Blvd.         1710 Fortune Dr.         2500 Walsh Ave.         3101 Whipple Rd., #           Tampa, FL 33634         Tampa, FL 33634         San Jose, CA 95131         Santa Clara, CA 95051         Union City, CA 9458	NuDes Need 1					
Company PCPC PCPC Radius, Inc. RasterOps Relax Technology 4710 Eisenhower Blvd. 4710 Eisenhower Blvd. Tampa, FL 33634 Tampa, FL 33634 San Jose, CA 95131 Santa Clara, CA 95051 Union City, CA 9458		And the second second second second			-	
4710 Eisenhower Blvd.       4710 Eisenhower Blvd.       1710 Fortune Dr.       2500 Walsh Ave.       3101 Whipple Rd., #         Tampa, FL 33634       Tampa, FL 33634       San Jose, CA 95131       Santa Clara, CA 95051       Union City, CA 9458						i year
Tampa, FL 33634 Tampa, FL 33634 San Jose, CA 95131 Santa Clara, CA 95051 Union City, CA 9458	Company					
(800) 622-2888 (800) 622-2888 (800) 227-2795 (408) 562-4200 (800) 848-1313					Santa Clara, CA 95051	Union City, CA 94587



# NOW THE ONLY TIME YOUR PRESENTATION HAS TO LEAVE YOUR OFFICE IS WHEN YOU'RE READY TO GIVE IT.

ow, you can produce your own professional-quality 35mm color slides, overhead transparencies, and prints, right at your desk. Without the service bureau, without the long turnaround time, without the high cost, and without losing control. All it takes is your color Macintosh, and ColorFast, the new color digital film recorder from GCC Technologies. GCC Technologies.

### As Easy As "Print."

If you know how to use a laser printer, you know how to use ColorFast. Simply select the ColorFast driver in the Chooser and you're ready to go. Design your presentation using your favorite software—Microsoft® PowerPoint,™ Aldus Persuasion,™ you name it. Then, select "print" and you'll be amazed.

What you see on the screen will be transformed into beautiful, 32-bit color slides, transparencies, or prints, at a fraction of what service bureaus charge. The

cost with ColorFast is just 75¢ per 35mm slide. So, you reduce your costs up to 94%, without sacrificing any quality.

### Incredible Quality, Fast.

ColorFast uses the newest technology from Polaroid,® the undisputed leader in digital film recording. This results in incredible colors, generated by our 33-bit (11 bits per color) pixel recording. To that we've added our imaging software (including outline fonts), so you get true "Professional-quality," at a full 4K resolution. There is also a faster "High-quality," 2K resolution and a quick 1K "Draft" mode. You can even use our "Enhanced Color Resolution" software option to get 4K results at 2K speed.

And because the typical business

slide takes only two minutes, what you see on your Macintosh can be on the presentation screen almost instantly. Which means you can make those last minute decisions and changes without sacrificing the quality of your presentation. Or a major chunk of your budget.

Even with all it does, perhaps the most amazing thing about ColorFast is its price: just \$5,999. This includes everything: film recorder, 35mm and Pack Film adapters, instant 35mm slide processor, overhead enlarger, software, sample films, slide mounts, and cables.

### **Two-Year Warranty.**

Finally, ColorFast is the only digital film recorder with a two-year warranty.

To get ColorFast, all you have to do is call 800-422-7777. We'll give you the name of your nearest GCC Technologies dealer, or you can order direct. When you buy direct from GCC, you get a 30-day money-back guarantee and \$9 overnight delivery. Call today. And start creating more professional presentations, in your own office, tomorrow.

### 800-422-7777.



Peripherals With Vision."

Please circle 93 on reader service card.

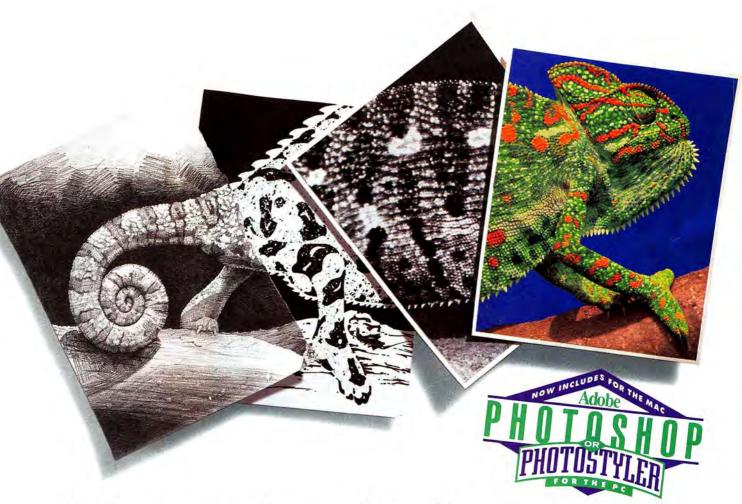
GCC dealers are independent businesses and as such they may offer different prices, policies, and service arrangements. In Canada call 800 263-1405. © 1990 GCC Technologies, Inc.

THURSDAY &

average production



	Seiko Instruments 14" Color	Sigma Designs ColorMAX 8/24	SuperMac (Hitachi) 19"	SuperMac (Hitachi) 21"	SuperMac (Sony) 19"
	\$\$\$\$1/2	\$555	\$\$\$\$%	\$\$\$\$1/2	15115
List price (system) Monitor only Board only (NuBus)	\$1,644 \$899 \$745 (RasterOps 264)	\$6,095 \$4,299 \$1,795	\$6,799 \$2,800 \$3,999 (Spectrum/24 PDQ)	\$8,399 \$4,400 \$3,999 (Spectrum/24 PDQ)	\$7,199 \$4,200 \$2,999 (Series III)
Street price (system)	\$970	\$4,299	\$4,275	\$4,844	\$4,212
Pros	Great value, quality. Complete controls.	Low price. Sharp, good focus. No flicker.	Excellent value. Very fast QuickDraw.	Excellent value. Very fast QuickDraw.	Great value. Very sharp. Fast.
Cons	Small screen. No glare protection.	Geometry slightly off.	Few external controls.	Few external controls.	Few external controls.
Monitor specifications				Water Land	
Tube type, phosphor	Seiko Trinitron, P22	Sony Trinitron, P22	Hitachi Invar mask, P22	Hitachi Invar mask, P22	Sony Trinitron, P22
Overall/active screen	14-/13-in. diag.	19-/18-in. diag.	19-/17.75-in. diag.	21-/18-in. diag.	19-/17.75-in. diag.
Active screen area	9.5 x 7.25 in.	14.5 x 10.75 in.	14.25 x 10.75 in.	15 x 11.25 in.	14.25 x 10.75 in.
Screen dimensions	640 x 480 pixels	1,024 x 768 pixels	1,024 x 768 pixels	1,152 x 870 pixels	1,024 x 768 pixels
Screen resolution	72 dpi	72 dpi	72 dpi	77 dpi	72 dpi
Color modes	2/4/16/256/mill.	2/4/16/256/mill.	2/4/16/256/mill.	2/4/16/256/mill.	2/4/16/256/mill.
Vertscan rate	66.7 Hz	79 Hz	75 Hz	75 Hz	75 Hz
Horizscan rate	35 kHz	64 kHz	60.24 kHz	68.68 kHz	60.24 kHz
Bandwidth	25 MHz	100 MHz	80 MHz	100 MHz	80 MHz
Power consumption	150 W; board, 10.5 W	220 W; board, 19 W	135 W; board, 16.8 W	140 W; board, 16.8 W	220 W; board, 18.75 V
Antiglare treatment	none	OCLI	Asahi antireflection	Asahi antireflection	Asahi antireflection
Controls Brightness/contrast	side/side	internal/front	front/front	front/front	internal/front
Vert. position/size	rear/rear	front/internal	internal/internal	internal/internal	front/internal
Horiz. position/size	rear/rear	internal/internal	internal/internal	internal/internal	internal/internal
Degaussing	auto at power-up	auto at power-up	auto at power-up	auto at power-up	auto at power-up
Vert./horiz. convergence	internal/internal	front/front	internal/internal	internal/internal	front/front
Other Case (W x H x D, in.)	14 x 13.25 x 15.75	19 x 18.75 x 22.25	19.25 x 18.25 x 19.5	19 x 19 x 20	19 x 19 x 21
Weight	33 lb	85 lb	88 lb	70.4 lb	97 lb
Tilt/swivel stand	yes	yes	yes	yes	yes
Software	gamma correction	gamma correction	hardware pan and zoom, QuickDraw acceleration, screen saver	hardware pan and zoom, QuickDraw acceleration, screen saver	hardware pan and zoo QuickDraw acceleratio screen saver
NuBus block transfer	no	no	no	no	no
Warranty	1 year	1 year	1 year	1 year	1 year
Company	Seiko Instruments USA 1130 Ringwood Ct. San Jose, CA 95131 (408) 922-5900	Sigma Designs, Inc. 46501 Landing Frwy. Fremont, CA 94538 (415) 770-0100	SuperMac Technology 485 Potrero Ave. Sunnyvale, CA 94086 (408) 245-2202	SuperMac Technology 485 Potrero Ave. Sunnyvale, CA 94086 (408) 245-2202	SuperMac Technology 485 Potrero Ave. Sunnyvale, CA 94086 (408) 245-2202



# Adapt to Changing Environments With Microtek's Color/Gray Scanner.

At last, a scanner that adapts to your changing needs.

The Microtek MSF-300Z Color/Gray scanner reproduces everything from 24 bit color to 8 bit gray-scale to black and white

line art. All at 300 dpi. Making it the one image capturing device that's ideal for desktop publishing, multimedia projects, presentations, even pre-press work.

And at just \$2,695, it's ideal for limited budgets, too. Especially when you consider it includes some of today's most sophisticated color and gray-scale image editing software.

What's more, you can work in the operating environment of choice. Whether it's with the MSF-300Z for your IBM PC



or PS/2. Or the MSF-300ZS for the Macintosh.

Call 800-654-4160 or in California, 213-321-2121

for all the details. And get the one scanner that adapts to whatever you're trying to capture.



The Color/Gray Scanner is just one membe of a whole family of innovative scanners available from Microtek.





MICROTEK Better Images Through Innovation.

\* Microtek Lab, Inc., 680 Knox Street, Torrance, CA 90502, (213) 321-2121 (800) 554-4160 \* Microtek International, Inc., No. 6, Industry East Road 3, Science-Based Industrial Park, Hsinchu Taiwan, 30077, R.O.C., 886-35-772155 \* Microtek Electronics Europe, GmbH., Schießstraße 72. D-4000 Dusseldorf 11. F.R. Germany, 49-211-52070 \* 0 1990 Microtek Lab, Inc., All rights reserved. MSF-30023 are trademarks of Microtek International, Inc. IBM and PS/2 are trademarks of International Business Machines Corporation. Macintosh is a registered trademark of Apple Computer, Inc. \* Chameleon photo by R. Dev/All Stock.

### **TOO SMALL** 13-INCH APPLE DISPLAY



# **AFFORDABLE 16-INCH DISPLAYS**

Turn your Macintosh into your own Personal Color Workstation with an E-Machines 16-inch display. 

ColorPage T16, the full-page 16-inch Trinitron display judged best for

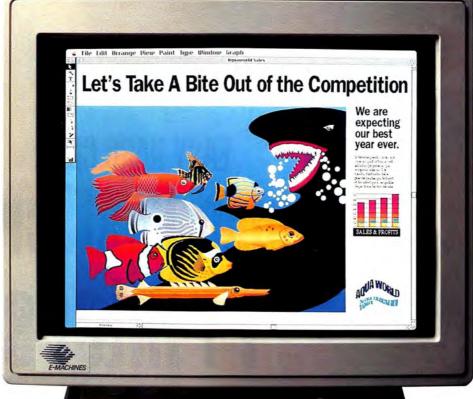
two years running by MacUser Labs, igives a whopping 70% more working space than you get on an Apple 13-inch RGB, one full-page including the margins.

That's room enough to view an entire year's budget or a complete presentation slide at a glance. 💰 E-Machines' TX, the two-page 16-inch Trinitron display packs 19-inch



### **JUST RIGHT** 16-INCH E-MACHINES DISPLAY

THICKLIE OF THE TOP OF







# FOR BUSINESS AND PUBL

performance in an amazingly affordable 16-inch package, and with exceptionally sharp detail. 👛 Both 16-inch

E-Magination at work<sup>TM</sup>

E-MACHINES

For your nearest dealer, call or write.

9305 SW Gemini Drive, Beaverton, OR 97005 FAX 503-641-0946

1-800-34-GRAPHIC

displays offer 8-bit as well as the most affordable 24-bit large screen color for desktop video and true color applications.

E-Machines, The 16-inch Display Company also offers a complete line of monochrome, gray scale and color display systems.



# EASY HARD COPY: Color PostScript Printers

These five printers
make color
desktop publishing
easy and highquality presentations
affordable.



BY
PAUL YI
AND THE
MACUSER LABS

he first chapter of the desktop-publishing saga was printed in black-and-white on an Apple LaserWriter. Chapter 2 will be in full color. And although there isn't a color LaserWriter — yet — there is a solution that works as seamlessly as the original LaserWriter: the thermal-wax color PostScript printer.

Although future color printers will probably use laser technology, today's reigning king of color printing is the thermal-wax-transfer printer. This kind of printer doesn't produce prints as gorgeous as the continuous-tone beauties from laser or dye-sublimation printers, but its ease of use, low media costs, and PostScript abilities have made it the workhorse of color printing (see Figure 1).

Thermal-wax-transfer printers occupy the middle ground of color printing. Other technologies can give you better-quality prints, but be prepared to spend much, much more for the honor of being on the cutting edge of color (see the "On the Horizon" sidebar). At the low end are color inkjet printers that sell for less than a third of the cost of thermal-wax printers. Although inkjet printers offer low-cost methods for performing personal color printing and producing simple business presentations, their image quality is not up to the demands of desktop publishing. Sophisticated business presentations—especially those that require bright, crisp transparencies—also demand quality higher than an inkjet printer can produce.



### Figure 1: Color Printing







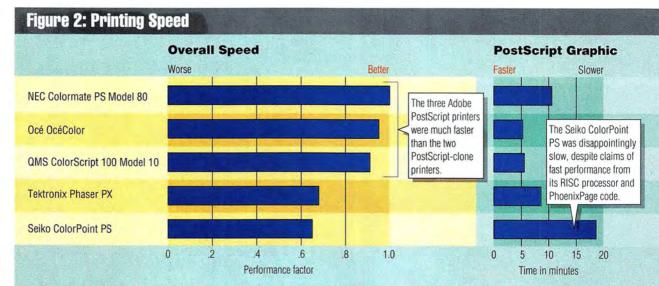
Dye sublimation



Color laser

If you're a desktop publisher who uses color, you need a printer that can produce accurate comps — composite images that show, in colorful detail, what your page will include when it returns from the printing press. Of course, no desktop printer can match the color accuracy and high resolution of a professional printing press. Comps are an intermediate — although necessary — step in the color-desktoppublishing process.

None of the printers we tested are suitable for color proofing — the final step in checking a complex color image - because of low resolution and unpredictable colors. A color matchprint proof can cost \$50 to \$100, and it can take days to be processed by a service bureau. If perfection is not absolutely necessary, a print from a good PostScript thermal-wax printer can give you a usable preview. It's not proof quality, but at 50 cents a page and a few minutes per print, the thermal-wax advantage is obvious. And as Apple and third-party developers

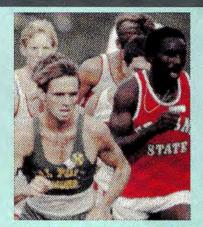


### **Overall Speed:**

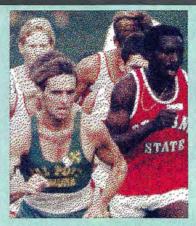
We tested how quickly each printer could handle typical colorprinting chores. The NEC Colormate PS Model 80 was the fastest, with the Océ OcéColor a close second. Third was the other Adobe PostScript printer, the QMS ColorScript 100 Model 10. The two PostScript clones finished far behind, with the Tektronix Phaser PX edging the Seiko ColorPoint PS to stay out of last place. Look at the individual tests to see which results pertain to your own printing needs.

### PostScript Graphic:

A complex PostScript graphic with colored fills and blends taxed each printer's processor. The illustration was originally created in Swivel 3D and imported and printed from Adobe Illustrator.



Thermal-wax transfer



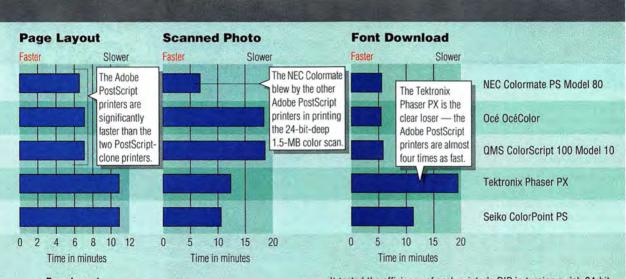
Inkjet

Figure 1: Using a thermal-wax-transfer PostScript printer is just one of the color-printing options available to Mac users. The first example is a traditional four-color separation of a 35mm slide. The continuous-tone technology of the dye-sublimation Kodak XL7700 and the Canon Color Laser Copier 500 produces images close to the original. Of the five thermal-wax PostScript printers we tested, the Tektronix Phaser PX had the best image quality - not as good as the continuous-tone or four-color-separation images but superior to the output of the low-resolution Hewlett-Packard PaintWriter Color Graphics inkjet printer.

refine color calibration (the ability to include accurate color information in files), thermal-wax printers may solve the color half of the proof problem even though their resolution will never be near that of a matchprint.

MacUser Labs looked at five PostScript thermal-wax-transfer printers for producing letter-sized printouts. One, the OMS ColorScript 100 Model 10, won our color-printer contest last May (see "Color on the Page," May '90, Buyer's Guide page 56) and is the only repeat contender. It now faces much stiffer competition, however. Two other PostScript printers from last year — the Océ Graphics Océ 5232 CPS Color PS and the Tektronix Phaser CPS - have been upgraded to the Océ Graphics OcéColor and Tektronix Phaser PX. They're joined by the NEC Technologies Colormate PS Model 80 and the Seiko Instruments ColorPoint PS.

As this report goes to press, Tektronix is introducing a new Phaser II line of thermal-wax printers — but



### Page Lavout:

A three-page QuarkXPress document filled with PostScript graphics, scanned photos, hairlines, and text of various sizes taxed everything: processor, engine, and LocalTalk interface.

### Scanned Photo:

A 1.5-megabyte scanned photo was printed from Adobe Photoshop.

It tested the efficiency of each printer's RIP in turning a rich 24-bit image into dots of color on the page.

### **Font Download:**

A Microsoft Word page with 17 downloadable Type 1 fonts taxed each printer's LocalTalk interface. The printer must handle printing the page as well as accepting 17 font outlines over LocalTalk.



### We've Made Large Screen Productivity Affordable.

Our engineers and designers were given the charter to build no-compromise display systems. The result is a full line of large screen display systems that rival the very best (Radius, SuperMac and RasterOps), at prices that make them a better value. The savings that you realize are not due to product differences so

much as distribution differences. You see, we choose to bypass the middleman, thereby eliminating rep commissions and dealer mark-ups to save you over 40 percent.

### Finally, A 20" Trinitron System That Breaks The \$3000 Barrier!

Our engineers designed our ProView/8 System around Sony's patented Trinitron® technology, which has become the standard by which all Macintosh screens are measured. Expect vivid color, superior geometric linearity, and sharp focus, only before available in systems selling for twice the price.

We designed our ProView interface cards to minimize component count and power consumption for superior reliability and long life. Our ProView 8-Bit Interface lets you choose between 1, 4, or 8 bit modes and gives you up to 256 colors.

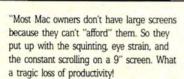
### At \$3997 Our 24-Bit Trinitron® System Costs Less Than Most 8-Bit Systems.

Our new ProView/24 Trinitron® System gives you photographic image quality with 16.7 million colors available. If you're doing desktop publishing, color graphic design or retouching color photos, Pro-View/24's photo-realism will enhance the speed and quality of your productions.

### Our PixelView II Gives You WYSIWYG Scaling For Under \$1000!

You've heard the reviewers speak of WYSIWYG (what you see is what you get) scaling and its importance to graphic applications. Now it's available on a two page display for under \$1000!

Our engineers chose P104 phospher for reduced eyestrain. And an anti-glare coating that allows the PixelView II to be used in any lighting situation. Plus a screaming 78Hz refresh rate for a rock solid flicker-free screen image.



But now with the ability to purchase factorydirect, you can't afford *not* to own a large screen. Without dealer markups and rep commissions you save over 40 percent.

But not all large screen systems are alike, so do your homework! We have. And the result is four complete systems designed to seriously impact your productivity.

We're so proud of our display systems that each comes with a 30 day "Love-It-Or-Return-It" guarantee. So take advantage of this risk-free opportunity to increase your productivity with a large screen. You'll wonder how you ever lived without it!"

TRUBBL

Ronald E. Eibensteiner, President/CEO



## View An Entire 8½"x11" Page For Under S500!

Our PixelView I portrait display allows you to view a full page at one time. You get a paper-like display with a crisp, stable image. And like all Mirror displays, the PixelView I has its own memory so it won't slow down your computer (like the IIsi or IIci's built in video circuitry). Its ergonomic design takes a minimum of deskspace and adjusts to any viewing angle.

# EXCLUSIVE! DeskTop Designer™ Software With Every Mirror Display System.

DeskTop Designer<sup>TM</sup> is a unique set of utilities that lets you custom configure your new display system. Until now, features like Pop-up Menus, Enlarged Cursor and Menubar, Screen Saver and Screen Copy were available only from Radius on systems costing twice the price. These important features are included with every Mirror Technologies display system!



## FREE! Award Winning VideoPaint... A S495 Value.

For a limited time, we are including Olduvai's Video-Paint with every ProView

Trinitron® system at no extra charge. This sophisticated graphic design and re-touching software was awarded 5 mice by MacUser France.

### Designed For Plug & Play Simplicity.

Each Mirror display system was designed to make installation and operation a snap. All systems include everything you'll need to get up and running: monitor, interface card, cables, and software.

# Large Screen Display Systems For Virtually Every Macintosh.

We have a color interface for every Mac II and the SE30. And monochrome systems for the Mac Plus, Classic, SE, SE30 and all Mac IIs. Whether your application requires color or monochrome, we have the solution!

# Your Mirror Display Could Be On Your Desk Tomorrow!

Our 30 day "Love-It-or-Return-It" guarantee lets you try one for 30 days risk-free. We ship 95 percent of our orders within 24 hours, so you'll be saving time and money.

## **Make The Right Choice!**

	PixelView I	PixelView II	Proview 8	Proview 24
Display type	1-bit mono	1-bit mono	8-bit color	24-bit color
Screen size	15"	19"	20"	20"
Viewing area (sq. in.)	90.77	151.58	151.58	151.58
Resolution (dpi)	80	72	72	72
Vertical refresh	75	78	75	74
Pop-up menus	Yes	Yes	Yes	Yes
Enlarged menubar	Yes	Yes	Yes	Yes
Enlarged cursor	Yes	Yes	Yes	Yes
Screen saver	Yes	Yes	Yes	Yes
Screen copy	Yes	Yes	Yes	Yes
Full year warranty	Yes	Yes	Yes	Yes
VideoPaint	No	No	Yes	Yes
DeskPaint v1.5	Yes	Yes	No	No
Tilt and swivel	Yes	Yes	Yes	Yes
Works with Plus, SE, CLassic	Yes	Yes	No	No
Dealer markup	No	No	No	No



17 August 1890

The control of the c

Walley Co.

MIRRO TECHNOLOGIES

Call Today! Order Factory-Direct.

1-800-654-5294

TECHNICAL SUPPORT HOTLINE: (612) 633-2105 Hours: Weekdays 8 a.m. - 6 p.m. CST Telephone: (612) 633-4450

Fax: (612) 633-3136

2644 Patton Road, Roseville, MN 55113

Please circle 406 on reader service card.









Mirror Technologies, PixelView, and ProView are trademarks of Mirror Technologies, Inc. All other trademarks and trademarks belong to their respective holders. Price availability subject to change without noice. No responsible for typographical errors. The Mirror monitor utilizes the Thinitron® cathode ray tube manufactured by Sony Corporation. Thinitron is a registered trademark of Sony Corporation. © 1991, Mirror Technologies, Inc.



don't worry about our results and conclusions being obsolete. The new Phaser II line uses a similar engine and ribbon, so you can read our observations about the Phaser PX as an early look at the new Phaser II line.

New developments in the colorprinter market include significant price reductions. The QMS ColorScript 100 Model 10 was the first to fall below the \$10,000 mark, with a price of \$9,995 — and it now lists for \$1,000 less. Even with this price reduction, the ColorScript 100 ties with the NEC Colormate PS Model 80 and Océ OcéColor for the highest list prices. The Tektronix Phaser PX lists for \$7,995, and the Seiko ColorPoint PS is even less than \$7,000. With competition this fierce, expect significant savings in street prices (see Table 1).

#### **Color RIPs**

All five printers use PostScript as their PDL (page-description language) — the software that tells the printer's engine, or printing element, how to make up a page. PostScript is the desktop PDL standard, producing highquality text, graphics, and images. The combination of the PDL software in the printer's ROM and the printer's hardware processor is referred to as the RIP (raster-image processor). A PostScript printer RIPs a file that is sent from a Mac, freeing the Mac to do other tasks. A non-PostScript printer requires the Mac to RIP the page.

The extra responsibility of RIPing the page requires hefty processing muscle. The three Adobe PostScript RIPs and the Tektronix Phaser PX's PostScript-compatible RIP run on Motorola 68020 microprocessors (the same chip that runs the Mac LC and the venerable Mac II), whereas the Seiko ColorPoint PS uses an Intel 80960 RISC (reduced-instruction-set computing) microprocessor.

Adobe developed PostScript and sells complete hardware/software RIPs to printer manufacturers. Some printer companies have reverse-engineered Adobe PostScript and have come up with their own PostScript-compatible

**How It Works: Color on the Page** Dye sublimation Thermal wax Color laser Halftone dot Thermal-wax printers use blocks of pixels to simulate varying shades of color (see

enlargements, which are at 800 percent). Color laser and dye-sublimation printers are

continuous-tone printers that can vary the intensity of their dots.

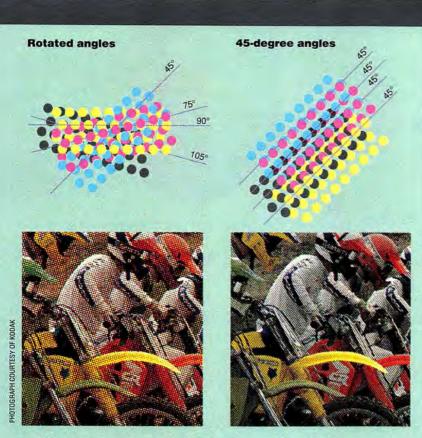
RIPs. The Seiko ColorPoint PS and Tektronix Phaser PX use PostScriptcompatible RIPs. These are the two least expensive printers, showing the economic advantage of not paying high royalties for Adobe PostScript.

The Seiko ColorPoint PS uses a third-party PostScript-compatible RIP from Phoenix Technologies called PhoenixPage. Tektronix has developed a proprietary PostScript-compatible RIP for use in the Phaser PX. This is the same RIP we tested in last year's review of the Phaser CPS, the Phaser PX's precursor.

The only compatibility problem we

had last year with the Tektronix RIP was its incompatibility with Adobe Type 1 fonts, the standard fonts used by most PostScript users. Since then, Adobe has opened up the specification for Type 1 code, so most PostScript clones can now print Type 1 fonts, although some still can't read hints (information that varies the shape of characters so that they look better at 300-dpi resolution and small sizes). A Linotronic imagesetter has a resolution of 1,270 or 2,540 dpi, so it doesn't require special hinting to make small characters more legible.

The Tektronix PostScript clone can



#### Halftone screen

To minimize the interference patterns — moirés — that result from overlaying four layers of dots, traditional printing rotates each layer. This approach creates groups of dots — rosettes that the eye finds easy to blend, and it works well for high-resolution electronic prints such as those from Linotronic film. With 300-dpi printers, however, the rosettes become large and too noticeable and prints show irritating moirés.

A better way to print with low-resolution devices such as thermal-wax-transfer printers is to print the four color layers at the same angle, thus eliminating conspicuous rosettes.

now handle Type 1 fonts, but it still can't interpret hints. Seiko's Phoenix-Page, on the other hand, is fully compatible with Type 1 fonts, including hints. The three Adobe PostScript printers are fully compatible with Type 1 fonts, hints and all.

### Thermal-Wax Technology

After a file is RIPed, it's passed to the printer's thermal-wax engine, where a thermal print head melts dots of colored wax (supplied on ribbons). The wax is then transferred by mechanical pressure onto smooth paper between the print head and a platen roller. The paper is peeled away, the unmelted wax remains on the ribbon, and the melted wax sticks to the paper. A mirror image of the printout always remains on the ribbon after the printout is completed, so if you're dealing with sensitive data, be sure to dispose of used ribbon in an appropriate manner so a simple mirror won't become a window to your secrets.

After wax of one color has been transferred to the paper, the print engine grabs the trailing edge of the paper and pulls it back for two or three more color passes. Ribbons come on rolls with alternating sheets of three or

four colors: cyan, magenta, vellow, and sometimes black. Black - a combination of cyan, magenta, and yellow can be used as a fourth primary to add emphasis and image definition. Four of the printers use a four-color ribbon; the Tektronix Phaser PX uses a three-color ribbon.

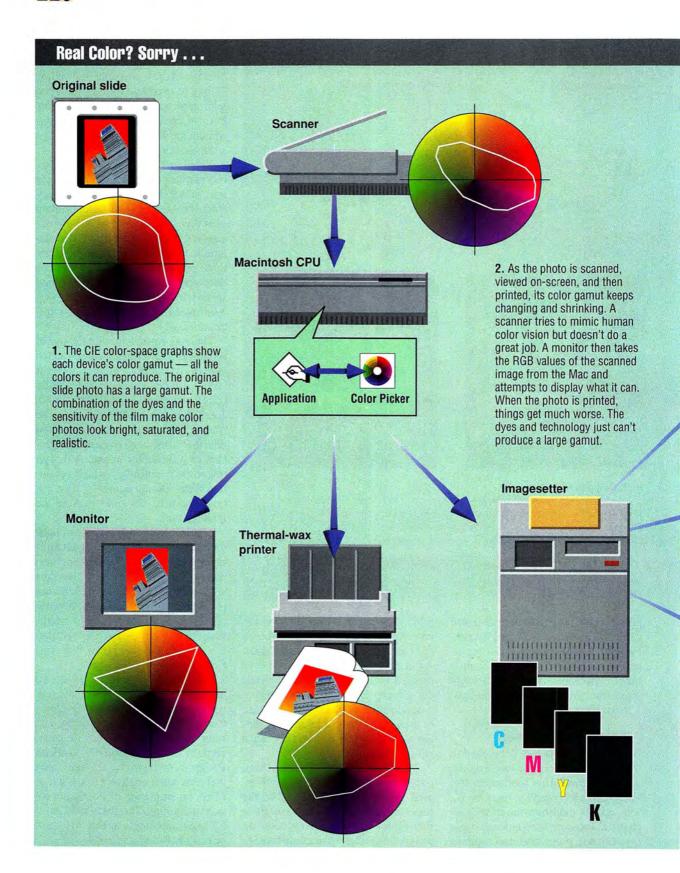
You need only the three primary colors to create millions of colors (see the "How It Works: Color on the Page" sidebar). All traditional color printing uses this three-color model -for example, every color photo in this magazine is made up of small dots of the three primary colors plus black. The dots are printed in patterns called screens in a process called halftoning. Your eye blends the screens into a fullcolor image.

The major problem with the use of screens is interference patterns called moirés. To minimize moirés, the four color halftone screens are traditionally printed at angles — usually 45, 75, 90, and 105 degrees - to each other. The rotation creates a pattern of colored dots that works well to create the illusion of a full-color image. Although this works beautifully for high-resolution film, 300-dpi thermal-wax printers have a harder time making the illusion work.

The problem is that for rotated halftone screening to work, each dot must be imperceptible. With 300-dpi thermal-wax printing, however, the dots are relatively large, so moirés remain a problem. At this resolution, a better approach is to print each of four halftone screens at the same angle to alleviate moirés (see the "How It Works: Color on the Page" sidebar).

The NEC Colormate PS Model 80 uses the default PostScript rotatedhalftone-screen angles. The Océ Océ-Color and the QMS ColorScript 100 offer either rotated screens or sameangle screens. The Seiko ColorPoint PS has its own proprietary halftoning that uses same-angle screens but also offers an emulation of PostScript rotated halftoning. The Tektronix Phaser PX uses same-angle screens in its proprietary halftoning method.



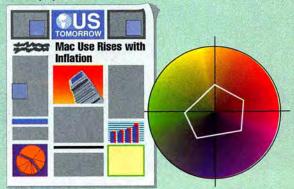


3. When the original photo finally appears in print - after enduring further modification in the four-color-separation process — its color gamut has shrunk considerably.

**Proof print** 



#### Newspaper or tabloid



Color on the Mac is not WYSIWYG. What you see on your monitor may or may not be what comes out of your printer, because the millions of colors that 32-bit QuickDraw lets you use have no objective definitions. Scanners, monitors, and printers can digitize, display, and print millions of colors, but the color you get at each stage is different. Mac color is device-dependent, and - unfortunately - different devices produce different colors.

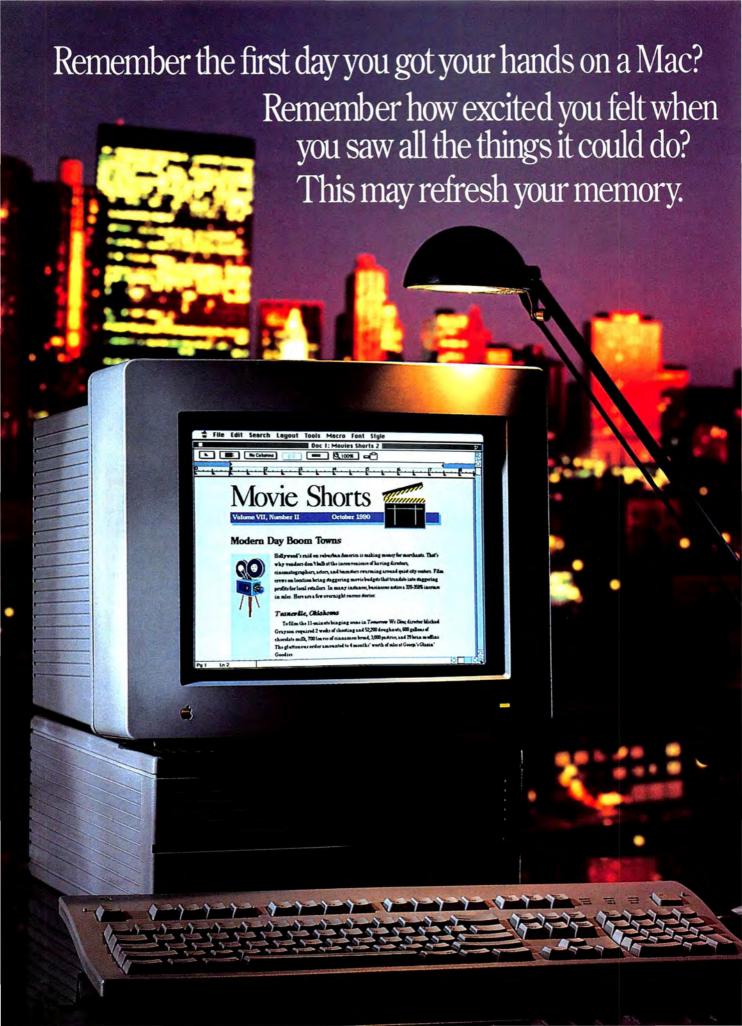
If Mac color is ever to be consistently predictable, color values have to be specified in an objective, device-independent way. At present, Mac colors are specified by the Apple Color Picker, which unfortunately doesn't tell you what the real colors are. The values it specifies are different from monitor to monitor and from printer to printer.

There is, however, an internationally accepted way, called the CIE color space, to name colors objectively. Instruments calibrated to CIE specifications can accurately and consistently report back the CIE coordinates for any color. And systems based on CIE data are currently available for the Mac. Tektronix's TekColor Picker, a replacement for Apple's Color Picker, is based on a CIEderived objective color space and accurately matches monitor and printer colors. SuperMac has incorporated TekColor into its SuperMatch system, providing consistency for SuperMac monitors and some color printers. Kodak has announced a color format called YCC, which calibrates electronic images by using CIE-based data. Kodak has also announced plans for creating a total color definition, using the CIE color space.

Although this is all good news for color users, the Mac still needs a system-level color-definition method that can integrate these proprietary approaches and link the color process seamlessly and easily. The three companies mentioned have formed a working group on color issues to achieve this goal. The group, called the Association of Color Developers (ACD), will draft a specification that will allow application developers to interface with color systems under a single protocol. Other key companies in the group are Adobe, Aldus, Apple, BarneyScan, Claris, Pantone, QMS, and Radius. There's also an ISO committee, called the IT.8 committee, working on a color file format that will be an industry standard. It will be based on the CIE color space and will also handle issues of compression.

Adobe has also joined the pursuit of better color by announcing that PostScript Level 2 will specify colors in CIE terms. Adobe's new color support will undoubtedly have a great impact on the entire printing market as people take advantage of the other features of PostScript Level 2.

The five printers discussed in this report all claim "Pantone certification," but more than a certification sticker is needed to solve color-accuracy problems with the Mac. Although Pantone inks are used to specify colors in the publishing world, in the world of computers, Pantone is not a real color-definition standard (see "The Pantone Touch" May '90, page 341).





# Introducing WordPerfect® 2.0.

Every once in a while a new product comes along that sparks the same kind of excitement you may have experienced with your first Macintosh (you stayed up half the

night, right?). As we've shown new WordPerfect® 2.0 to Macintosh users around the country, we've seen a very similar reaction. First eyes open wider. Then heads start to nod. Followed by grins that stretch dimple to dimple.

# Here are some of the more graphic improvements.

We built a graphics and drawing package right into the program. With WordPerfect 2.0, you don't have to leave your document to incorporate graphics.

You can create, edit, size, scale and crop graphic figures just by clicking "graphics" or "draw" on the pull-down menu. The palette includes all of the standard drawing tools, plus Bezier curves, polygons and a free rotation tool.

Speller... Thesaurus

Language

**Graphic** 

Text Box

Outlining...

Merge...

Sort... Index Etc

Draw Overlay...

Remove Overlay.

Date/Time... 第合D

第4T

New

Edit ...

Llose Number...

Frame...

Caption..

Options.

WordPerfect 2.0 also lets you create text boxes. Inside your text boxes you can change font size and attributes. Then you can drag your text box wherever

you want in your document and the rest of your text will wrap around it automatically.

# The list of new features could fill a page. Or up to 24 columns.

By clicking and dragging icons on the new WordPerfect ruler, you can create columns (newspaper or parallel) and then adjust the column settings, align text, set tabs, change line spacing, move margins and do a number of other formatting changes to your document.

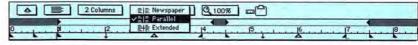
Want to add a border to text, paragraph, column, or page?

Easy. WordPerfect 2.0 gives you 36 different border styles from which to choose. Like working with Styles? WordPerfect not only lets you use them, you can also share your styles with other people on your network.

We've also added new features like a Macro Editor, Tables of Authorities, and Line

Numbering. And we've made

Q 100%



enhancements to Merge, Search and Replace, and Macros.

# Of course, what counts is how you feel.

See WordPerfect 2.0 up and running at your dealer. Better yet, buy a copy of WordPerfect 2.0 and load it onto your Mac. For a limited time, your dealer can give you a great trade-up allowance for your version of Microsoft Word. But when you try WordPerfect 2.0 for the first time, one word of warning. Don't plan on going to bed early.

For more information, call us at (800) 526-5012.

# \$125\* Trade Up Offer.

If you have any version of Microsoft Word, we'll make it easy for you to move up to WordPerfect 2.0. Take the registration cover sheet from your Word software manual (or other proof of purchase) to a WordPerfect dealer and

get WordPerfect 2.0 for just \$125\* during this offer.

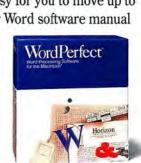
Offer expires May 31, 1991.



1555 North Technology Way, Orem, Utah 84057 Tel: (801) 225-5000 FAX: (801) 222-5077

WordPerfect is a registered trademark of WordPerfect Corporation within the United States and other countries. All other brand and product names are trademarks or registered trademarks of their respective companies. \*Suggested price in the United States (\$165 Canadian). Offer good in the United States and Canada. ©1991 WordPerfect Corporation.

Please circle 418 on reader service card.





All the printers in this review print wax dots at 300 dpi — this measurement is known as a printer's resolution. When printing colors other than the primaries or black, however, the printers use blocks of dots, each block comprising one primary color, in arrays of either 5 x 5 or 6 x 6. The printer can no longer address the full 300 dpi, because it must use the blocks to build a full-color image. This effectively reduces the "apparent" resolution of color images from 300 dpi to 60 or 50 dpi (in printing terms, 60 or 50 lpi, or lines per inch). For line-art and monochrome text, the printers don't need to trade resolution for color range, so output quality is close to that of monochrome laser printers. Technologies such as dye-sublimation and color laser use variable-intensity and variabledot methods to get smoother colors (see Figure 1 and "Color on the Page," May '90, Buyer's Guide page 56).

### Setup

Last year's color-printer roundup was a setup nightmare of NuBus cards, parallel cables, and cumbersome software drivers. This year, however, we made our task easier by focusing on PostScript printers. One definition of a Mac PostScript printer is that it must include a standard Mac LocalTalknetwork connection. All you need is a LaserWriter driver in your System Folder and a LocalTalk connection, and the printer will show up in your Mac's Chooser.

All five printers include serial and parallel interfaces in addition to a LocalTalk port. Non-Mac computers use serial or parallel connections. The two PostScript clones offer an advantage for mixed networks: All three ports are simultaneously active. You can print to the Seiko ColorPoint PS and Tektronix Phaser PX simultaneously from a Mac and two IBM PCs, using all three interface ports; the printer arbitrates among the ports and buffers the image as it needs to. To switch ports on the NEC Colormate PS Model 80, Océ OcéColor, or QMS ColorScript 100 Model 10, you have

# On the Horizon

Color desktop printing is taking off, and manufacturers are rushing to supply a broad range of output devices for every stage in the publishing process. Tektronix, for example, is introducing a new line of thermalwax-transfer printers, upgrades for the Phaser PX we looked at in this report. The new Phaser II line starts off with the basic non-PostScript Phaser IISX, sporting a low price of \$4,495. The line is modular, so the IISX can be upgraded to the Phaser IIPX, which lists for \$7,995 and is a PostScript printer that can automatically switch among ports. At the high end of the new Phaser II line is the Phaser IIPXN (\$10,995), one of the first Mac printers to offer an Ethernet interface along with LocalTalk, serial, and parallel ports. Tektronix, Inc., P.O. Box 1000, M-S 63-630, Wilsonville, OR 97070; (800) 835-6100 or (503) 685-3585.

To compete with the less-expensive PostScript-clone printers, NEC is now offering a scaled-down version of the Colormate PS Model 80 we tested in this report. The Colormate PS Model 40 will ship with 4 megabytes of RAM and 17 fonts instead of the 8 megabytes and 35 fonts of the Colormate PS Model 80. It will list for \$6,995. NEC Technologies, Inc., 1414 Massachusetts Avenue, Boxborough, MA 01719; (800) 343-4418 or (508) 264-8000.

The new thermal-wax-transfer CalComp ColorMaster Plus (\$6,995) is the second color printer - after the Seiko ColorPoint PS - to use the PhoenixPage RIP. The ColorMaster Plus also comes in a version for printing tabloid-sized pages (\$9,995). CalComp, 2411 W. La Palma Avenue,

Anaheim, CA 92801; (800) 225-2667 or (714) 821-2000.

The General Parametrics Spectra Star 400 printer series starts with the Model 410 (\$5,995), which doesn't include PostScript, and moves up to the Model 430, which provides hardware PostScript built in. The entire line is upgradable and includes the Model 440 (\$9,295), which has an internal hard disk, and the Model 450 (\$14,995), which lets you output Mac graphics onto slides. General Parametrics, 1250 Ninth Street, Berkeley, CA 94710; (415) 524-3950.

JVC has announced a continuous-tone dye-sublimation thermal-transfer printer with a resolution of 300 dpi. It is scheduled to ship during the fourth quarter of 1991 at a list price of around \$25,000. JVC Information Products Company of America, 19900 Beach Blvd., Suite 1, Huntington Beach, CA 92648; (714) 965-2610

Several companies have announced inkjet printers at both ends of the price spectrum. Iris Graphics offers the SmartJet Series Model 4012, a continuous-tone inkjet printer. Through a patented variable-dot technology, the 300-dpi SmartJet Model 4012 has an apparent resolution of 1,200 to 1,800 dpi. Prices start at \$39,000. Iris Graphics, Six Crosby Drive, Bedford, MA 01730; (617) 275-8777.

The Hewlett-Packard PaintWriter Color Graphics printer (\$1,395) will feature a new printer driver and color-matching capabilities. HP is also announcing brighter, bolder inks for this printer and its existing line of inkjet printers. The new inks will address the problem of printing to transparencies, a

to physically set the active port on the printer's front panel.

A printer's ability to switch ports automatically is becoming popular, as we saw in the March report on personal PostScript printers (see "Personal PostScript Printers," March '91, page 116). We're also seeing more and more printers that can switch among different PDLs. Besides using different interfaces, computers often use other PDLs besides PostScript. The QMS ColorScript 100 and Tektronix Phaser PX offer HP-GL (Hewlett-Packard's vector-based PDL) emulation, but you still need to select the active PDL on

the front panel of the printer.

All except the Tektronix Phaser PX come with a SCSI port that lets you attach a hard disk for storing downloadable fonts and some printer software. The Seiko ColorPoint PS actually has two SCSI ports built in, but the version we tested didn't support font hard disks. Seiko plans on full support by the time you read this.

#### **Wax and Paper**

The hardest part of setting up a thermal-wax-transfer printer is installing the ribbons — and even this isn't too difficult. QMS makes things a little



The continuoustone Canon Color Laser Copier 500 represents the cutting edge in color output.

noticeable flaw of earlier HP inks. Hewlett-Packard, 19310 Pruneridge Avenue, Cupertino, CA 95014; (800) 752-0900 or (408) 725-8900

Kodak's Diconix Color 4 (\$1,595) is a 192-dpi inkjet printer that prints on plain paper and transparencies. Eastman Kodak Co., 343 State Street, Rochester, NY 14650; (800) 344-0006.

The first of two color laser printers to come onto the Mac market is the Colorocs CP4007 (\$29,995) plain-paper color printer, a 300-dpi PostScript-compatible printer that prints at 5 ppm (pages per minute) in full color and 40 ppm in black-and-white. The CP4007 uses a single-pass electrophotographic technology to print on either A- or B-sized paper and on transparencies. Colorocs Corp., 2805 Peterson Place, Norcross, GA 30071; (404) 840-6636.

The second laser printer is the Canon Color Laser Copier 500 (\$49,000), which

prints gorgeous 400-dpi images on plain paper and also doubles as a color copier, a slide scanner, and a flatbed color scanner. PostScript ability will soon be available from Adobe, CAI (Custom Applications, Inc.), and Efi (Electronics for Imaging). An optional film scanner, film projector, and other input and output devices are also available. Canon, One Canon Plaza, Lake Success, NY 11042; (516) 488-6700.

Ilford will soon ship a continuous-tone printer, the Digital Photo Imager, which prints in 16.7 million colors on smooth paper, transparencies at 300-dpi resolution, and 35mm slides. Thanks to its liquidcrystal-cell technology, multiple copies can be printed at a rate of up to 180 prints, 120 transparencies, or hundreds of slides per hour. The list price will be around \$50,000. Ilford Photo, W. 70 Century Road, Paramus, NJ 07653; (201) 265-6000.

- Darryl Chan

confusing by offering two types of ribbons: one for Pantone-certified colors and another for brighter colors. And although the five printers use different ribbons, they all claim to conform to the Pantone color-definition system - a reason to be wary of claims of "Pantone certification" (see the "Real Color? Sorry . . ." sidebar).

Ribbons come on a roll that installs in a plastic case that then slips into the printer. It's a simple procedure - and you'll get a lot of practice at it, because each ribbon roll is good for only 50 to 120 prints. Four of the printers have paper trays that can hold 100 sheets of

special smooth paper; in the case of the Seiko ColorPoint PS, the paper comes in rolls of 145 prints each.

The roll method of the ColorPoint PS gives it a unique way of increasing the print area. All thermal-wax printers must hold on to a sizable part of the paper to roll it back and forth for each color pass, which limits the vertical image area to about 9 inches on 11inch-long paper. The ColorPoint PS, because it is not confined to an 11-inch piece to begin with, merely cuts off the section of paper it has been holding, thus allowing a greater print area — as if it had used a larger piece of paper in the first place. The ColorPoint PS has a print area of 10.7 vertical inches, and a little scrap of paper — the "handle" is left over, along with the printout in the output tray.

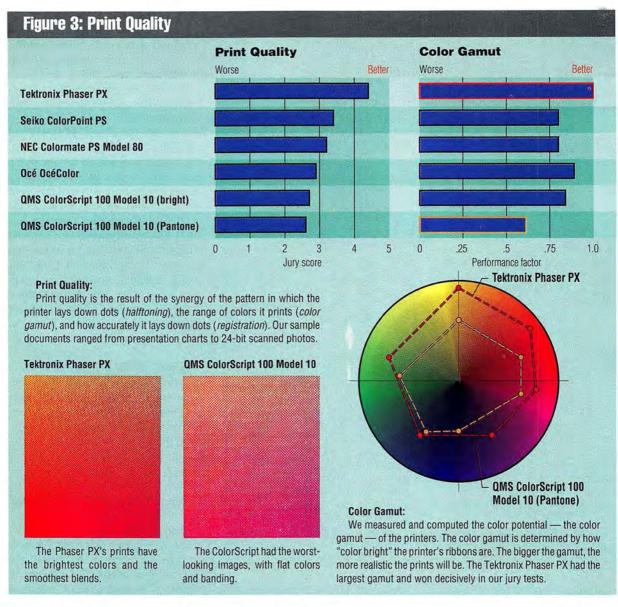
Two of the printers also come in versions that can accommodate tabloid-sized paper - the QMS Color-Script 100 Model 30i (\$12,995) and the Seiko ColorPoint B-size (\$9,999). Océ will have a tabloid version of the OcéColor for around \$16,000, to be named by the time you read this. And speaking of dimensions, the size of the printer itself usually isn't a major factor-until you try to heft the 73-pound Tektronix Phaser PX. In contrast, the compact ColorPoint and OcéColor weigh around 42 pounds. If you're in a crowded office, you'll need to think twice about where you'll put any of these printers - and if you choose the Phaser PX, you'll need a sturdy desk.

### Speed Testing

After setting up and loading our five printers, we tested the two aspects desktop publishers are the most concerned with: speed and image quality. Two things — the processor and the engine speed — normally influence printer speed. For thermal-wax-transfer printers, the engine speed is only one page per minute, so in this case, it's the processor that makes the difference.

We passed a range of color documents through the printers to see how well their processors could RIP the images. We started with a relatively simple presentation chart and then printed a complex PostScript graphic, a scanned photo, a page-layout document, and a font-intensive document. Our presentation document was a twopage file with a bar chart, a pie chart, and colored text. The PostScript graphic was a logo first created in Paracomp's Swivel 3D and then imported into Adobe Illustrator. A fullcolor slide image containing a broad range of skin tones was scanned by a Barney CIS-4520 Slide Scanner; the resulting 1.5-megabyte file was then printed from Adobe Photoshop. The page layout consisted of a three-page





QuarkXPress document, which included a variety of text, PostScript graphics, PICT files, and scanned TIFF files. The font-intensive test, which involved 17 downloadable Type 1 fonts, let us evaluate the efficiency of the printers' LocalTalk management and how well the RIP is integrated with the Mac interface.

After the final wax had melted, the speed winner was the NEC Colormate PS Model 80 printer (see Figure 2). The other two Adobe PostScript printers were in second and third

place, far outdistancing the two PostScript-clone machines. The poor performances of the Seiko ColorPoint PS and the Tektronix Phaser PX were disappointing, because the ColorPoint PS uses a RISC processor — whose reduced instruction set serves only one function, to print PostScript — and the Phaser PX makes only three passes per print whereas the other printers make four. Each printer had its own personality and handled some types of test prints better than others: Take a look at the individual test results to see

which printer is fastest for your most common applications.

The only difficulty we had in running the tests was with LocalTalk on the Seiko ColorPoint PS. When we repeated the tests for statistical accuracy, the ColorPoint's print times sometimes varied by minutes, whereas the other printers varied only by seconds. It turned out that the ColorPoint PS has a bad ROM in its LocalTalk implementation. Seiko reports that it is now working on remedying this problem.



# Introducing Color That Out-Neons Neon.

Amazing, isn't it? The monitor image actually out-shines the real thing. Introducing two of the brightest Macintosh-compatible color monitors ever made: the Seiko Instruments 14" CM-1445, and 20" CM-2050.

Our new Trinitron\* monitors brighten your ideas with a blazing 100 NITs\* of color. That's a full 30 NITs brighter than an Apple\* MAC II\* RGB monitor's maximum of 70 NITs. Which means with us, your colors can be 43% brighter.

Your fire engine reds can be 43% hotter, glacier blues 43% icier, and sunshine yellows can almost give you a tan. In fact, with color brighter than neon in 16 million possible shades, anything you can imagine, you can see. And every eye-popping pixel will be razor sharp because of our high resolution Trinitron tubes.

So if you're looking for color, just use your eyes. You'll see that Seiko Instruments is the brightest choice you can make.

Call **1-800-888-0817 Ext. 104R** for information and an Authorized Dealer.





# Expand the power of QuarkXPress with XTensions.





# Manage the design of a publication with *Page Director*.

This publication management XTension from Managing Editor Software, Inc. lets you build a publication *and* keep track of all the page elements. You can

create complete page layouts, then generate reports that give you the status and design characteristics of

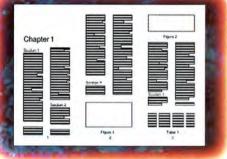
copy, graphics, and advertising as your publication comes together. With the unique "Gatherer" feature, you can have Page Director search for files on your network and place them directly in predesignated locations. Page Director even suggests color configurations based on a library of up to 2,048 configurations. When your publication is ready, flow it directly into QuarkXPress for final changes and output.

# Flow information from a data base into QuarkXPress automatically with *Autopage*.

K. Erf Associates has created an automated page makeup XTension that helps you with the production of books, manuals, textbooks, technical documentation, and technical journal articles. Autopage lets you take advantage of batch processing to flow text directly into Quark XPress and automatically control page breaks, graphics placement, footnotes, and vertical spacing.

Now you can use the precision of QuarkXPress and — by automating the page makeup process —

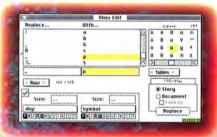
significantly decrease your production time.



# Implement multiple search and replace operations with *Alias*.

With this XTension from RESEAUX, you can run whole sets of search and replace operations to save time when you are working on large or complex documents. What's more, you can customize Alias to allow multiple strings to be defined and stored as tables.

Uses for this XTension include typographical correction, conversion of PC text files, filtering downloaded text files, implementation of professional ligatures, and copy correction. Alias comes with a set of search criteria that enables you to quickly correct common errors, such as those in punctuation and spacing.

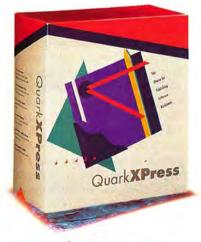


# And much, much more!

If you are interested in receiving information about Quark XPress and a catalog of available XTensions, please circle the reader service number below or call 1.800.356.9363.

# Quark**XTensions**

Expand the Power of QuarkXPress



# QuarkXPress®

The Choice for Publishing Software Worldwide

Please circle 410 on reader service card.

Quark, Inc., 300 South Jackson Street, Denver, Colorado 80209

QuarkXPress is a registered trademark of Quark, Inc. QuarkXTensions is a trademark of Quark, Inc. All other trademarks are the property of their respective owners.



### **Good Looks**

To determine image quality, we used a combination of subjective and objective tests. For the subjective aspect, we assembled a jury of color-publishing experts and selected a range of documents for them to rate. They looked at six images, comprising a spectrum of graphics and business documents, from each printer.

To reinforce our jury's opinion, we used a 928 Spectrocolorimeter, from X-Rite, to get an objective measurement of the range of colors the printers can produce - the color gamut. We also determined any misregistration of the printers, measured in pixel percentages: We printed one-pixel colored lines to test the accuracy of each color pass.

Compared with the speed results, the winners and losers switched places: The two PostScript-clone printers led the three Adobe PostScript printers, with the Tektronix Phaser PX showing clearly superior halftoning and bright ribbons. Our jurors preferred the Phaser PX's prints over those of any other printer, and they least liked the QMS ColorScript 100's output (see Figure 3). The two PostScriptclone printers had better halftoning than the Adobe printers, and although the QMS ColorScript 100 and Océ OcéColor improved on the normal PostScript halftoning, their prints didn't approach the quality of a Tektronix Phaser PX print.

We then forced each printer to print with identical rotated halftone screens to test the engine and ribbons alone and eliminate any advantages or disadvantages of proprietary halftoning. The results were illuminating: The Tektronix Phaser PX prints still looked the best. Besides having the best halftoning method, the Phaser PX also had the brightest ribbons, as evidenced by its having the largest color gamut. But whereas the Seiko ColorPoint PS finished second to the Phaser PX when using default halftone screens, it fell behind when forced to use the same halftoning method. The consistent loser was the QMS ColorScript 100, with

# The Bottom Line

Speed, reasonable cost, ease of use, and good image quality make PostScript thermal-wax printers the hands-down choice for color printing - for today, at least.

Our two favorites were the NEC Colormate PS Model 80 (\$8,995) and the Tektronix Phaser PX (\$7.995). The NEC Colormate PS was the fastest printer of all, performed well in the image-quality tests. and showed the tightest registration. The Tektronix Phaser PX, although not a speed demon, produced the best images. The Tektronix ribbons are by far the brightest, and the Tektronix halftoning method produces the best-looking prints. Keep your checkbook open for the upcoming version of the Phaser PX, the Phaser IIPX.

Our third choice, the Océ OcéColor (\$8,990), was almost as fast as the NEC Colormate, and if Océ improved its halftoning, it would also be an image-quality contender. The OcéColor has the secondlargest color gamut, behind the Tektronix Phaser PX. The fourth best among the printers we tested, the Seiko ColorPoint PS (\$6,999), had the second-best-looking prints, thanks to its proprietary halftoning method; the largest print area; and the lowest price - but it was also the slowest and we had problems with the LocalTalk interface (which Seiko promises to fix soon).

The QMS ColorScript 100 Model 10 (\$8,995) was last year's winning color printer -it even got MacUser's Eddy Award for the best color-output device of 1989. But things happen fast in the computer world, and the ColorScript is starting to show its age. Its poor image quality moves it to last place.



Our two favorites were the NEC Colormate PS Model 80 (left) and the Tektronix Phaser PX. The Colormate was the fastest printer in our tests, and the Phaser had the bestlooking color output by far.

both the smallest color gamut and the worst overall halftoning method.

The NEC Colormate PS Model 80 is noteworthy for having the best registration of all the printers, although the Tektronix Phaser PX came in a close second. The worst registration showed in the QMS ColorScript 100's prints.

### Conclusion

Although you can spend less - or a lot more - the best day-to-day way of getting color output from your Macintosh is with a PostScript thermal-wax-transfer color printer. The ease of use, low cost, and availability of these printers are hard to beat. Color laser printing is making inroads, with its plain-paper printing, fast speeds, and variable-dot technology, but at prices of more than \$50,000, color laser printers are justifiable only for large networks. Dye-sublimation printers offer photo-realistic prints, but their price-per-print costs are still too high—around \$5 a print. Inkjet printers are ideal for personal color printing, but they just aren't fast or precise enough for graphics use.

If you're a desktop publisher or a creator of high-quality business presentations, you'll find thermal-waxtransfer PostScript printers to be more than adequate for your needs - if you don't set your standards too high. Although these printers can create excellent comps, their ability to produce proof-quality output will have to wait until standards of color accuracy become more widely accepted and colorcalibration technology improves.

Paul Yi is a MacUser associate editor who tries to add color to everything in life.



The Wacom cordless, pressure-sensitive stylus.



The Mac has always had great potential in graphic arts. But until now, no one has really

provided a tool to unleash it. There has always been some form of mechanical trade-off imposed by input devices that inhibited artists from letting their imaginations flow naturally.

Now, Wacom introduces a totally "real" graphic tool, one that let's you interact with the Mac as intuitively as you would with a canvas. With Wacom's cordless, pressure-sensitive stylus your will is converted through manual pressure to line width, spray density, color

change and other programmable effects. This allows you to create "real time" artistic images free of the artificiality and limitations of other input devices. And since the Wacom stylus has neither cable nor battery, it is also ultra-light and maintenance free.

Wacom, a leading name in computer graphics worldwide with proven manmachine interface technology, invites you to a new era in Macintosh graphics with a promise:

Once you experience it, you'll never look back.

#### Wacom SD-Series Digitizers:

 A0 to A5, square or rectangular
 Surface types: standard, magnetic, electrostatic, or transparent menu panel . Pointing devices: Stroketype, or nonstroke-type cordless stylus, pressure sensitive stylus, 4-button or 12-button cordless cursor . Driver software: ADI driver, mouse drivers, Windows drivers, Macintosh driver . Compatibility: PCs, Macintosh, and workstations.

#### Performance/Specifications

 Resolution: 1,270 lines/inch (0.02mm) ● Accuracy: ±0.01 inch (±0.25mm) over entire active area • Reading speed: Max. 205 points per second . Data transfer rate: Max. 19,200 baud . Interface: RS-232C or optional GP-IB . Command set: Wacom II, MM, Bit Pad Two

Power supply: built-in (A2 to 11"×11" tables) or external (A0, A1, A5).



#### WACOM Inc.

West 115 Century Road, Paramus, NJ 07652, U.S.A. Tel: (1) 201-265-4226, Fax: (1) 201-265-4722

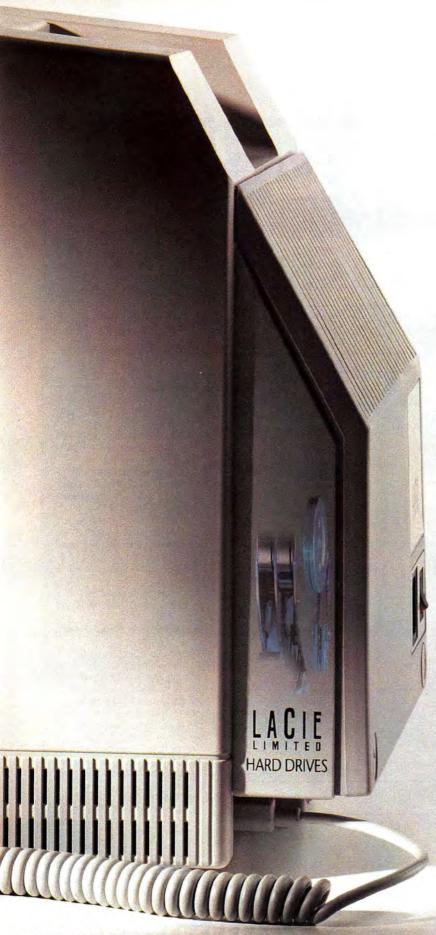
### WACOM Computer Systems GmbH:

Hellersbergstrasse 4, D-4040 Neuss 1, West Germany Tel: (49) 2101-16001, Fax: (49) 2101-101760

ACOM is a registered trade mark of WACOM Co., Ltd. opyright © 1990 by WACOM Co., Ltd. All rights reserve acintosh and Mac are trademarks of Apple Computer. It



	NEC Colormate PS Model 80	Océ OcéColor	QMS ColorScript 100 Model 10
	\$\$\$\$\%	\$\$\$\$	\$\$\$ <sup>1</sup> /2
List/street price	\$8,995/\$6,895	\$8,990/\$7,192	\$8,995/\$6,995
Pros	Fastest, Decent	Fast. Compact design.	Fast, Improved
	image quality.	Best black-type quality.	halftoning and ribbons.
Cons	Poor halftoning.	Poor halftoning.	Worst image quality.
	. cor nanconing.	t oot nantoning.	words image quanty.
Hardware Processor, clock speed	Motorola 68020, 16 MHz	Motorola 68020, 16 MHz	Motorola 68020, 16 MHz
RAM (standard configuration)	8 MB	5 MB	5 MB
Additional RAM, price	none	3 MB, \$1,200	1 MB, \$395; 4 MB, \$995 (8 MB max.
Print-engine manufacturer	NEC	Shinko	Mitsubishi
Hard-disk drive	20 MB, \$995	third party	third party
Interface	RS-232, RS-422/LocalTalk,	RS-232, RS-422/LocalTalk,	RS-232, RS-422/LocalTalk,
	Centronics	Centronics	Centronics
Auto-switching interface	no	no	no
Resident fonts	35, Adobe	35, Adobe	35, Adobe
PostScript type, version	Adobe, v. 51.9	Adobe, v. 50.3	Adobe, v. 50.3A
Emulations	none	none	HP-GL
Dimensions (W x D x H, in.)	17 x 21.5 x 15	9.9 x 16.1 x 17.5	16.9 x 24.8 x 11.3
Weight	55 lb	42 lb	65 lb
Media handling			
Delivery	sheets	sheets	sheets
Paper sizes	letter, A4	letter, letter +	letter, legal, A4, special A4
Printable area on letter-sized paper	8 x 8.9 in.	8.2 x 9.3 in.	8.1 x 9 in.
Tray capacity	100 sheets	100 sheets	100 sheets
Pantone-certified	yes	yes	yes
Supplies			
Letter-sized paper	500 sheets, \$35	600 sheets, \$55	2,000 sheets, \$125
Letter-sized transparencies	50 sheets, \$25.50	100 sheets, \$115	100 sheets, \$125
Ribbon	150 sheets, \$90	200 sheets, \$98	120 sheets, \$52.50
Cost per letter-sized print	\$0.67	\$0.58	\$0.50
Cost per letter-sized transparency	\$1.75	\$1.64	\$1.70
Warranty	1 year or 24,000 pages	1 year	1 year
	(first 90 days, on-site)		
Company	NEC Technologies, Inc. 1414 Massachusetts Ave. Boxborough, MA 01719 (800) 343-4418 (508) 264-8000	Océ Graphics USA, Inc. 385 Ravendale Mountain View, CA 94039 (800) 545-5445 (415) 964-7900	QMS One Magnum Pass Mobile, AL 36689 (800) 631-2692 (205) 633-4300



# IT'S ABOUT TIME SOMEBODY PUT HARD DRIVES IN THEIR PLACE.

Not in front, on the side, over or under.

But all the way to the back (which is why we named this hard drive Bacster™). And it does have a tendency to go unnoticed.

What doesn't go unnoticed is the Quantum drive inside with effective access times as low as 8ms\* and 50, 100 or 200 MB capacities.



There's also the free copy of Silverlining™ that comes with every La Cie drive. Silverlining is the #1 rated hard drive management program that gives you up to 30% more speed

· For Mac Plus & SE

· Double burn-in · Quiet and light

· Backed by \$400

· Free delivery

million in assets

· Toll-free technical

service and support
2 year renewable
limited warranty

· Free Silverlining and Norton Utilities

than the competition.

And wait, there's more. A free copy of Norton Utilities® for the Macintosh® (A total software value of \$300).

Here's something bold and new. A two year limited warranty† unlike any other because it's renewable.

If anything goes wrong with your Bacster Quantum

drive, call La Cie. We'll repair or replace it immediately, and renew the warranty for another two years.

And since La Cie is a Plus Development company (backed by \$400 million in assets), you can rest assured we'll outlast our warranty.

If that's not enough to convince you,

maybe this will. Visa and Mastercard accepted. Volume discounts available. Free delivery. Call now.

\$599

1-800-999-0143 (ext. 54)



TECHNOLOGY WITH A SILVERLINING.™

"La Cie...the King of consumer choice."—MacWorld

"Typical application access time using DisCache" iffestrictions apply. Please contact La Cie for complete warranty information. (5) 1991 La Cie, It Bassler, Shvenining, La Cie and the La Cie, It Lid logo are trademarks of La Cie, It Li, A Plus. Development Company, All Other trademarks are the property of their respective holdies. All prices, specifications, terms and descriptions of products and services been are subject to change



# Table 1: Features of Thermal-Way-Transfer Color Printers

		r Golor Printers	
	Seiko ColorPoint PS \$\$\$\$	Tektronix Phaser PX	
List/street price	\$6,999/\$6,499	\$7,995/\$7,895	
Pros	Low price. Compact design. Good image quality. Largest print area.	Highest image quality. Largest color gamut. Low price.	
Cons	Slowest.	Slow. No SCSI port.	
Hardware Processor, clock speed RAM (standard configuration)	Intel 80960 (RISC), 16 MHz 6 MB	Motorola 68020, 16 MHz 6 MB	
Additional RAM, price	1 MB, \$250 (34 MB max.)	4 MB, \$995	
Print-engine manufacturer	Seiko third party	Sharp	
Hard-disk drive Interface	third party  RS-232, LocalTalk,  Centronics, SCSI	no RS-232, LocalTalk, Centronics	
Auto-switching interface	yes	yes	
Resident fonts	39, Bitstream	36, Bitstream	
PostScript type, version	PhoenixPage (Adobe v. 50.3 emulation)	Tektronix v. 2.06	
Emulations	none	HP-GL	
Dimensions (W x D x H, in.)	14.1 x 17.5 x 8.1	17.4 x 17.2 x 14.7	
Weight	41.8 lb	73 lb	
Media handling			
Delivery	rolls (paper and transparency)	sheets	
Paper sizes	letter, A4, A Super	letter, legal, A4 special folio	
Printable area on letter-sized paper	8.2 x 10.7 in.	8.1 x 8.8 in.	
Tray capacity  Pantone contified	145 prints per roll	100 sheets	
Pantone-certified	yes	yes	
Supplies	445		
Letter-sized paper	145 sheets, \$10.15	1,000 sheets, \$53	
Letter-sized transparencies	120 sheets, \$87.60	50 sheets, \$57	
Ribbon Cost per letter-sized print	172 sheets, \$68.80 \$0.47	342 sheets, \$135 \$0.45	
Cost per letter-sized transparency	\$1.13	\$1.54	
Warranty	90 days	1 year	
Company	Seiko Instruments USA, Inc. Graphics Devices	Tektronix, Inc.	
	& Systems Division	Graphics Printing & Imaging Division	
	1130 Ringwood Ct.	P.O. Box 1000, M-S 63-630	
	San Jose, CA 95131	Wilsonville, OR 97070	
	(800) 873-4561	(800) 835-6100	
	(408) 922-5800	(503) 685-3585	

### Criteria

List/street price - The list price is the manufacturer's suggested retail price. The street price is an average actual price charged by dealers around the United States in January

Processor, clock speed - The manufacturer and speed of the chip that processes the PostScript data sent from your Mac.

RAM (standard configuration) -The amount of on-board memory standard with the printer.

Additional RAM, price - Any optional memory upgrades and their

Print-engine manufacturer — This is often not the same company that sells the printer.

Hard-disk drive — If the printer has a SCSI port, you can attach a harddisk drive, either from a third party or from the printer vendor.

Interface — Interfaces other than LocalTalk connect the printer to IBM

Auto-switching interface - Some printers can intelligently auto-switch among interfaces without users having to configure them.

Resident fonts — The number and type of fonts in the printer's ROM. PostScript type, version — The type and version number of the Post-Script or PostScript-clone code in the printer's ROM.

Emulations - Some of the manufacturers provide popular printer languages.

Delivery — Either stacks of sheets or rolls of paper.

Paper sizes - Most printers handle the popular sizes, with some offering special letter sizes to increase the printable area.

Printable area on letter-sized paper - Thermal-wax printers usually have much smaller printable areas than do laser printers.

Tray capacity — These printers have limited paper-tray capacities, because of the thickness of the special smooth paper.

Pantone-certified - All of the printers carry the Pantone seal of approval.

Letter-sized paper — The number of sheets and the cost of the special smooth paper.

Letter-sized transparencies — The number of sheets and the cost of transparent media.

Ribbon - The number of copies and the cost of a ribbon.



You asked for higher capacity
You asked for greater reliability
And you always ask for more speed
Now, you can have it all...
ten up to the PLI Infinity 88 Turb

Step up to the PLI Infinity 88 Turbo

From the most trusted name in removable hard drive technology. 800-288-8754 or 415-657-2211





Peripheral Land Incorporated • 47421 Bayside Parkway • Fremont, California 94538 • Fax 415-683-9713



# Incomparable Comps.

# Outstanding Overheads.





# Fantastic Finish.

Perfect printing.

Your work deserves it and Color-Master® Plus was specifically designed to deliver it.

ColorMaster Plus has the right resolution: 300 dpi.

You get PostScript power: it's 100% Adobe compatible.

It's color correct: PANTONE certifies it. Size selection? Letter or tabloid with full bleed—giving you the largest live image for any desktop printer.

Plenty of ports, too. SCSI, Appletalk, RS-232 and Centronics parallel so you can mix and match different computers

# New ColorMaster Plus



on one ColorMaster Plus printer.

And all ColorMaster Plus models
come with something you simply can't

get anywhere else: CalComp product quality and long term commitment to service, support and supplies. Our 1-year on-site warranty is just one example.

Your incredibly intelligent next step? Call **1-800-932-1212** for more information. In Canada, 416-635-9010.

We draw on your imagination.™



CalComp, P.O. Box 3250, Anaheim, Ca 92803. © 1991 CalComp Inc. ColorMaster Plus and We draw on your imagination are trademarks of CalComp. All other product names, logos, trademarks or registered trademarks are property of their respective manufacturers. All images created with Aldus FreeHand and Persuasion software.



Will color matching be the next technology to acquire a standard? Each product — TekColor, SuperMatch, Radius Toolkit, Photo YCC, and so on currently has a different interface, but the color vendors have joined forces to create a protocol that will let you (or rather, your application) access every color-matching product in the same way. The (as yet unnamed) standard will force products to compete strictly on functionality and color WYSIWYGness. ETA: summer 1991.

By Aileen Abernathy

Teaching an old font new tricks: FontMonger, from Ares Software ([415] 578-9090), rolls the best of Metamorphosis, ParaFont, and Art Importer into one must-have utility. Developed by the same team that created Letraset's FontStudio, FontMonger converts type formats in any direction among Type 1, Type 3, and TrueType. You can turn type into Illustrator or EPS files or take the



reverse tack and turn EPS images into font characters. But wait, there's more: You can combine characters from different typefaces into a single font, or you can make a font with customized characters such as obliques, fractions, and small caps. All this for \$99.95. Hot, hot, hot.

Xpanding horizons: Page Director fills a void in Mac-based publication-management tools. This \$895 program from Managing Editor Software ([215] 635-5074) focuses on production, not design, and can track, assemble, and configure all the elements of a newspaper (or magazine) page. One catch: It's a QuarkXTension, so tough luck if you use PageMaker. ❖ Speaking of QuarkXTensions, more than 30 of these third-party modules are now available, adding specialized features such as database publishing, indexing, and pagination. To get a free QuarkXTensions catalog, send Quark a postcard (trust me, it's faster than calling). ❖ Quark has also released two free QuarkXTensions: NetworkConnection, which adds groupware capabilities, and FeaturesPlus, a collection of utilities for setting preferences, making fractions and prices, and more. Both are available from on-line services or from Quark (\$25 shipping). ❖ Finally, Quark is offering Passport, a multilingual version of QuarkXPress 3.0 that lets you choose among 12 languages for both text and menus within a single document (spelling and hyphenation dictionaries included). A mere \$2,495.

**P**roduct news: Eddy Award nominee FrameMaker 2.1 is still less than a year old on the Mac, but Frame ([408] 433-3311) is about to push version 3.0 out the door. The most significant new feature is the comprehensive tables package, but the upgrade also adds conditional-text capabilities; more import/export filters;

# Action

and improved color features, including support for the DCS and OPI standards. The rev is due out by June, with an upgrade price of less than \$200. •• Effects Spe-

cialist from PostCraft ([805] 257-1797) offers 120 canned styles that work on any font, including non-PostScript and bit-mapped varieties. You can't hand-tweak the letter shapes, à la TypeStyler, and you have only eight color choices, but it's a no-brainer way to create instant display type. \$199.95. Timeworks ([800] 535-9497) is now offering special site licenses for schools: ten copies of Publish It! Easy 2.0 for \$300. Heck of a deal.



# RESTRICTED AREA

Your data is *your* data. And to keep it that way Kensington introduces PassProof<sup>™</sup> — the first complete data protection system for the Macintosh\*.



# First, the hardware.

A rugged cylindrical lock keeps your disk drive safe from intruders. Two

sturdy metal plates with tamper-proof screws block both rear-floppy and SCSI ports.

### Next, the software.

As the master user you assign yourself a master password. From then on, you use the password as your key to unlock the system. You can add or delete additional users whenever you want. And

PassProof's User Log keeps track of every attempt to use your Mac.

Want to "lock up" in a hurry? Quick Cover™ is PassProof's

		- 00000	PassProof'" User Log		
Thu	05/31/90	07:03:08 PM	Bill logged in		_
Thu		07:03:16 PH	Bill legged out		
Thu		07.03:27 PM	Bill logged in		
Fei		07:00:45 RM	Bill logged out		
Fri		07:00:58 Rt	Bill logged in		
Fri		07:01:11 At	Bill accessed control panel		
Fri		07:01:19 Att	Bill added new user: Carol		
Fri		07:01:32 Art	Bill logged out		
Fri		07:01:46 AH	Carel logged in		
Fri		04:02:00 Pff	Carel logged out	-	
Fri	06/01/90		Bill legged in		
Sat		04:03:07 PH	Bill logged out		
Sat	06/02/90		Bill logged in		
Sat		07:03:36 Pff	Bill logged out		
Sat	06/02/90		Steve logged in		
Sat		02:01:02 RM	Steve logged out		
Sat		02:01:13 Att	Bill logged in		
Mon		08:01:49 Rt	Bill logged out		
Tion		08 02:01 RM	Bill logged in		
Mon	06/04/90	10 02:13 Att	Bill logged out		
Hon	06/04/90	10 02 23 Att	Bill logged in		

screen-locking program that lets you secure your Mac on command.

Best of all PassProof is user friendly. Unless, of course, the user is unauthorized.

Ask your dealer about other Kensington accessories including cable and lock systems for all Apple and Macintosh computers, including the Mac Portable and the LaserWriter\* II. Or call for a free brochure at 800-535-4242. Outside the U.S., call 415-572-2700.

KENSINGTON.

# **Designing for Fax**

Faxes are becoming as important to business communications as a printed letterhead—and they should be designed just as thoughtfully.

By Kathleen Tinkel



ime-saving, attention-getting facsimile transmissions — a.k.a. faxes — have become an essential tool for huge corporations and tiny businesses alike. In spite of their usefulness, however, most faxes are homely things to look at. The slippery and sleazy paper doesn't help, nor do the broken lines and occasional blobs that result from phone-line noise. But the faxed ugliness goes beyond that, as if the senders are thinking, "Aw, they're just for quick communications. No one expects them to look good."

Think again. Faxes represent you, just as your business card and letterhead do. If you're concerned about making a good impression, be sure your faxes look as professional as the rest of your stationery. Unfortunately, the mechanics of fax transmission create a special set of design problems — you can't fax just anything and expect good results. To help you put your best fax forward, here are some tips and techniques I've uncovered as copublisher of a weekly faxed newsletter and as the recipient of hundreds of faxes from around the world.

#### Just the Fax

The capabilities of the sending fax machine (or fax modem) can greatly affect how you design a fax document. If your fax machine gives you control over 64 levels of gray, for example, you can send a realistic-looking photograph to any fax machine, even one that doesn't have gray-scale capabilities itself. Or

perhaps your fax machine accepts large originals (roughly 10 x 14 inches); you can certainly send oversized pages, but unless the receiving fax machine supports wide paper (which is rare), your documents will be reduced to fit a smaller sheet. Also keep in mind that whereas most fax units offer two resolution settings—Standard and Fine—faxes are usually sent at the lower-quality standard resolution, which is faster and cheaper. For these reasons (and more), you should design your faxes conservatively and be sure they are readable and attractive at standard resolution, even if you expect to send most of them at fine resolution.

Fax modems usually produce better-looking faxes than do stand-alone machines, because they send original documents directly from the computer without an intermediate scanning step that degrades image quality (see "Fast, Full-Featured Fax Modems," in this issue). The best image quality comes from a fax modem set to fine resolution, whereas a fax machine at standard resolution produces the worst (see Figure 1). For all fax units, fine resolution is 203 x 196 dpi and standard resolution is 203 x 98 dpi. Although fax resolution sounds as if it should be roughly two-thirds as good as a laser printer's 300 dpi, the arithmetic doesn't work out that way. The actual effect on type and graphics depends on the number of dots each device can fit into a square inch. A laser printer provides 300 x 300 dpi, or 90,000 dots per square inch, whereas a fax unit provides only about 40,000 (actually 39,788) dots per

# **Figure 1: Typeface Selection**

Adobe Garamond, a faxed example of the typerutiger 55 Roman, a faxed example Hiroshige Medium, a faxed example Italia Medium, a faxed example of the type. Lucida Roman, a faxed example of Palatino, a faxed example of the type. Stone Sans, a faxed example of the type.

Fax modem, fine resolution

Adobe Garamond, a faxed example of the ty Frutiger 55 Roman, a faxed example Hiroshige Medium, a faxed example Italia Medium, a faxed example of the ty Lucida Roman, a faxed example of Palatino, a faxed example of the type. Stone Sans, a faxed example of the typ

Fax machine, standard resolution

Figure 1: When designing a fax, choose the typeface based on your fax equipment and resolution. A fax modem coupled with ATM provides the best text output, giving you the widest choices in

typefaces and point sizes. Conventional fax machines at standard resolution fare the worst with type; stick to simple faces (preferably sans serif) in large point sizes (at least 12 points).

square inch at fine resolution — less than half the resolution of a laser printer.

Fax machines and fax modems have inherent disadvantages related to their features and ease of use that can affect the way you design documents. Conventional fax machines are often more convenient, particularly if most of your documents are not computer-generated. However, their low-precision scanners can introduce physical problems such as skipped scan lines, stretched characters, and vertical white lines. The originals may feed crookedly, causing straight lines (including those within type) to wind up broken and jagged (see Figure 2a). Specks of dust, fingerprints, and paper creases can all be transmitted as part of a document.

If your original document comes from a printer that produces a dot pattern (a category that includes laser, inkjet, and dot-matrix printers), the resolution mismatch between it and the fax machine can further degrade image quality, creating thicker lines, darker type, and blotchy artwork. This can be particularly troublesome if your fax includes small type sizes or intricate artwork.

Finally, few stand-alone machines make it easy and economical to send faxes at fine resolution. Only expensive machines offer features such as scheduling (so that faxes can be sent at a time when phone rates are lower), programmability (for sending multiple documents), and the ability to change the resolution to fine for all transmissions. Without these features, you're more likely to use the money-saving standard resolution than the image-enhancing fine resolution.

#### **Peculiarities of Fax Modems**

Fax modems offer more scheduling features than do stand-alone machines, and they avoid the image problems associated with scanning printed originals. However, fax modems transmit images as electronic bit maps, which places a different set of limitations on the handling of type and graphics. These problems — such as scaling distortions caused by the differing resolutions of the Mac's screen (usually 72 dpi) and the fax protocol (203 dpi horizontally) — are nonexistent with paper-fed fax machines.

The best way to image type for a fax modem is through Adobe Type Manager 2.0. ATM uses the power of PostScript to create crisp text on-screen at any size, and the fax modem transmits that scaled type directly. If you don't use ATM, the only way to avoid jagged-looking type is to install bit-mapped screen fonts that are three times the size of those in your document. The fax-modem software uses the oversized fonts to scale the type correctly

for transmission, but this option can be limiting. Only a few fax-modem vendors supply the necessary triple-sized fonts, and those that do usually provide only a limited selection of sizes and faces (often just Times, Helvetica, and Courier). If you want to use 11- or 13-point type for legibility (easy to do with ATM), you'll first have to find or make 33- or 39-point bit maps. With ATM, you avoid all these problems. (Keep in mind, however, that ATM works only with Type 1 PostScript fonts. Chicago, New York, and other bitmapped faces will still suffer from the jaggies if you don't have triple-sized fonts installed.)

Sending graphics via fax modem poses some resolution-related problems that are easier to solve on a conventional fax machine. On the positive side, images composed of vertical, horizontal, and 45-degree lines work just fine — perhaps better — with a fax modem, because there's no opportunity to insert a piece of paper crookedly. Curves and lines at other angles fare less well, with a tendency toward the jaggies. Intricate bit-mapped artwork in MacPaint, PICT, or TIFF formats) is often very effective, yielding an etched look.

However, unless your fax modem has gray-scale capabilities (which only the Prometheus Products Maxfax offers at

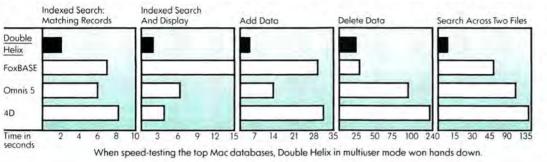


Since we know you're pressed for time, we'll skip the standard introduction and get straight to the point.

Double Helix is the fastest multiuser relational database for

## IMMEDIATE GRATIFICATION, RIGHT FROM THE START.

 Here is—and we quote—what MacWorld said in May 1990: "If you need a working database by Friday morning, and it's now Wednes-



day afternoon...your best bet is Double Helix." Talk about fast. With Double Helix in hand and no prior knowledge

the Macintosh." This, you should know, is not our personal assessment, but rather the conclusive results of MacUser magazine's June 1990 speed-test. And of the four top databases, in five key commands, Double Helix finished first. By considerable margins.

at all, you can, in a matter of hours, mold

Double Helix to conform to your individual

needs. And as your needs change, so can,
with minimal effort, your applications.



Not just built for speed: "Double Helix is the most user-friendly database currently available." MacUser, June 1990

# WELCOME TO THE WORLD'S VERY FIRST MAC-BASED

# CLIENT/ SERVER DATABASE.

What makes Double Helix so fast?

IF YOU'RE IN A HURRY, READ THIS AD.

DOUBLE HELIX IS THE MOST

AFFORDABLE MULTIUSER

### SYSTEM AVAILABLE. HONEST.

How do we figure? For one, the

Technically, it's because of our advanced client/server format. Unlike fileservers, which slow your system down by shuffling copies around the network, client/server lets all users work directly off a master. This keeps network traffic down. And productivity up.

In addition to speed, client/server provides another crucial benefit: total referential integrity. In other words, when one user makes everyone moving fost. a change to the master, the whole network gets updated—in real-time. On your screen. Right then and there. So everyone has the same data. And everyone's in sync. The end result: a group that's always working in one direction—forward.

By the way, and for the record, we were the first ever to introduce a Mac-based client/server. And while it was revolutionary at its debut in 1986, it is, remarkably enough, still revolutionary today. multiuser application is already included in every Double Helix box. And unlike other databases, it doesn't require any special fileserver software or hardware, saving you additional and quite substantial start-up costs. So with Double Helix, there's nothing more to buy. Nothing more to install. And nothing more affordable.

# THE FASTER YOU GET GOING, THE FASTER YOU GET GOING.

• We've just spent the last 456 words talking about how fast and affordable Double Helix is. Now you can spend the next 14 numbers confirming it all for yourself. Call 1-800-323-5423, ext. 234 and

we'll send you out a test flight demo and Quick Start instruction guide of your choice right away. After all, if you stayed with us this long, you've got no time to waste.



O ODESTA CORPORATION

# Figure 2: Design Considerations



FARVEY CELA

Fax machine

Figure 2a: Hairline rules come across fairly well at fine resolution, although they suffer some distortion when sent through a fax machine (bottom). The scanning process thickens the lines, partially obliterating the type (particularly the smaller face); also notice the "stair-stepping" of lines, caused by feeding the document crookedly.

# URSO

1234 ANYWHERE BOULEVARD EVERYTOWN, ANYSTATE 98765 PHONE 123 456-7890

Fax modem

**URSO** 

1234 ANTWHERE BOULEVARD EVERYTOWN, ANYSTATE 98785 PHONE 123 456-7890

Fax machine

Figure 2b: Large bold type works well for faxing (Helvetica Inserat is shown here). Even small bold type is readable when sent via fax modem (left), which tends to lighten type, but it should be avoided on a conventional machine (right), which causes the lines to thicken and the openings to fill in.



Compi

Fax modem



Fax machine

Figure 2c: With a fax modem, you can safely print type over a 20- or 30-percent screen (top left). The faxed output from a laser printer is too coarse and makes the text hard to read (top right). Bold type reversed out of a black background works well for all faxes (center). However, outlined type (bottom) poses a problem either way: A conventional machine makes the outline too heavy, whereas a fax modem produces lines that are too light. You're better off avoiding outlines and sticking with solid-black letters.

this writing), photographs and screened artwork are lost causes. Gray tones in the original image are converted to stark black-and-white blocks for transmission, often obscuring the contents (see Figure 3). A conventional fax machine with gray-scale and contrast controls does a much better job of handling such images. Likewise, PostScript graphics usually look better if they are printed on a laser printer and then scanned into a fax machine. None of the

Mac fax modems currently include a PostScript interpreter, which would bring the language's device- and resolution-independence to faxing. Because fax-modem software isn't able to interpret PostScript code, it sends a low-resolution (PICT) screen image instead. (If an EPS file doesn't include an embedded PICT, the image will be replaced by a rectangular placeholder.)

Finally, interactions among fax-modem

software, the Mac's operating system, and other resident applications may affect the appearance of your faxes, creating problems such as erratic type spacing or truncated lines. BackFAX, for example, has compatibility problems with hard drives formatted with La Cie's Silverlining software: It can run on such a drive, but it produces data errors, some of which show up as oddly formatted faxes. Most fax modems don't support fractional font

# Announcing Less Paperwork.





# (Before) (After) Introducing The Billing System You Helped Design.

Before developing our new billing system, we talked to our customers.

We listened to everyone who comes in contact with an invoice—Accounts Payable, Human Resources, Purchasing and the using and processing departments.

During the last two years, we combined your input with state-of-the-art technology in optical imaging, laser printing, EDI and EFT to create a new billing system that delivers the features you want most:

 Less paper plus faster checking and matching capability by printing copies of each time card right on the invoice.

- Easy-to-read, high-quality laser printing.
- Easy-to-handle, standard-size bond paper and no staples.

And we've included options that can save you additional time and money:

- Customized reporting to provide data on usage.
- For those who don't want any paper at all, we offer EDI (Electronic Data Interchange) for billing and EFT (Electronic Funds Transfer) for remittance.

The new Kelly® optical imaging laser billing system. Another industry first—only from Kelly.

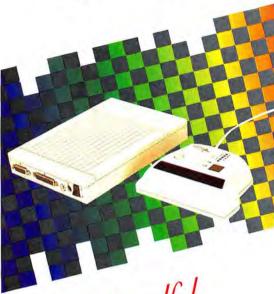


The Kelly Girl®People -The First and The Best®

Please circle 197 on reader service card.

©1991 Kelly Services, Inc.

# PageBrush/Color



A handful of color for your Macintosh

Full-color single pass handheld scanning. 100 to 400 dpi resolution. Image processing and editing tools, including 3-D effects and file translations. Macintosh SCSI interface included. Get smart, go color.

Mouse Systems PageBrush/ Color: Your computing world has never been so brilliant.



47505 Seabridge Drive Fremont, CA 94538 (415) 656-1117

Mouse Systems logo is a registered trademark. Other brand and product names are used for identification purposes only and may be trademarks or registered trademarks of their

# DESKTOP PUBLISHING DESIGN

widths, so you must turn off the tracking in programs such as PageMaker and QuarkXPress in order to avoid weird letterspacing. The original Abaton InterFax 24/96 fax modem was incompatible with QuarkXPress 3.0, but this was fixed by release 1.2 of the InterFax software. (If you're having problems sending Quark-XPress documents and have an earlier version of the InterFax software, contact Abaton for an update to version 1.2.2 or later.)

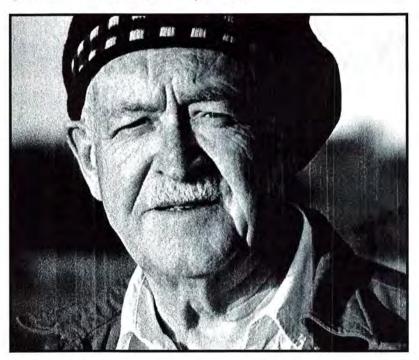




Figure 3: If your fax machine has gray-scale features, you can transmit a realistic-looking photograph (the top image was faxed at fine resolution). If it doesn't have this capability, the image will be converted to black-and-white and much content may be lost.

#### **Choosing a Typeface**

Before you begin worrying about the image they project, you should first make sure your faxes are readable. Faxed text has a dot pattern that's visible to the naked eye. Typefaces and styles that work well for laser-printed correspondence may be too small and light for faxing — you may find that increasing the type size from 10 points to 12 or 13 points helps readability. And some faces are clearly better at surviving the vicissitudes of faxing than others (see Figure 1).

A couple of years ago, Adobe tested the faxability of several typefaces and found that Lucida Roman, Lucida Sans, and Stone Sans worked best. (The results were published in Adobe's type catalog, Font & Function.) I ran some tests of my own, not limited to Adobe fonts, and found that these faces do indeed work well, along with Bitstream Charter; Adobe Utopia; and sans serif faces such as Frutiger, Helvetica, and Univers. These typefaces (and probably others that work well) share three characteristics:

- The letters have relatively unvarying, moderately heavy line weights.
- Openings within the characters (in the *e* and *a*, for example) are large.
- The letters are relatively plain. In general, sans serif typefaces work better than serif ones.

I conducted all these tests with conventional fax machines. If you're using a fax modem and have ATM, however, you can use a much wider range of fonts — in fact, almost any PostScript font works well. Although conventional fax machines tend to thicken lines, obliterating small text, fax modems tend to lighten them (see Figure 2b), which means that you can often use smaller font sizes and typefaces that have smaller letter openings.

### **Design Fundamentals**

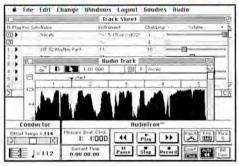
Once you've mastered the peculiarities of the fax format, creating a fax document is just another design project. I've already covered some considerations specific to fax machines, fax modems, and typeface selection. Here are the highlights plus a few more points to ponder:

- Don't use your printed letterhead for fax documents. Many things that are effective in print—embossing, foil or other metallic type, screened or pale type, very small type—can't be communicated effectively by fax. Instead, use a special fax letterhead with a related design.
- Keep type and images away from the margins so that they aren't truncated by

the faxing process. Margins of three-quarters of an inch all around seem safe.

- Phone lines can introduce visible errors, so choose typefaces and graphics that
  can survive missing or doubled-up lines.
   Sans serif faces are generally safer than
  serif faces, particularly if you use a fax
  machine. Graphics fare best if they have
  strong angles or bit-mapped textures.
- If you're using a conventional fax machine, avoid layouts with long straight lines, small type sizes, and intricate artwork. Misfeeds and phone-line noise cause unsightly broken lines, and the scanning process can thicken lines and darken type, causing text to become unreadable and turning artwork into a blotchy mess.
- For superior text output from a fax modem, use ATM with Type 1 fonts or be sure that your installed fonts include sizes that are three times as large as those in your documents.
- Avoid overlaying type on an illustration or screened area, especially if you use a fax machine (see Figure 2c). At best, the edges of letters will look fuzzy; at worst, characters will virtually disappear.
- For special emphasis, try reversing white type out of a black background. A sans serif typeface set in 18-point bold works well.
- Don't fax photographs or other grayscale artwork if your equipment lacks gray-scale and contrast controls (or you don't use them). Either create a posterized (black-and-white contrast) version of the artwork, or skip it altogether.
- If you have to send PostScript illustrations from a fax modem, create them at roughly three times the desired finished size and then export and reduce them in a layout program before faxing. This process enhances the apparent resolution of the embedded PICT image, minimizing the jaggies you normally get when faxing the PICT portion of a PostScript object.
- Most fax machines let you duplicate a
  document by passing it through the scanning mechanism in Copy mode. Although
  this is useful for seeing how the layout
  works on the fax page, it doesn't show you
  the alterations produced by the phone lines
  and shouldn't be used as a faxability test.
- Cover pages waste paper and are redundant if you also address the pages that follow. On the other hand, fax machines are often shared and a well-designed cover page helps direct the document to the right person. Unless you're concerned with confidentiality while the fax is awaiting pickup, your cover page can simply be the top part of the first document page.

# AUDIO DYNAMITE!



Record, edit and playback digitally recorded dialog or sound effects with MIDI music.

# **AUDIOTRAX**



Meet AudioTrax, the first software to combine MIDI and Digital Audio at an affordable price! Record up to 64 tracks of MIDI plus two tracks of digital audio using Farallon's MacRecorder® or an internal sound input device. Add sound effects or dialog to your MIDI composition creating complete sound tracks for desk top presentations. Sing vocals in sync with your music or add sound effects and narration to visual presentations. Bring the powerful impact of music and digital audio to your Macintosh® with AudioTrax!

# No Additional DSP Hardware Required!

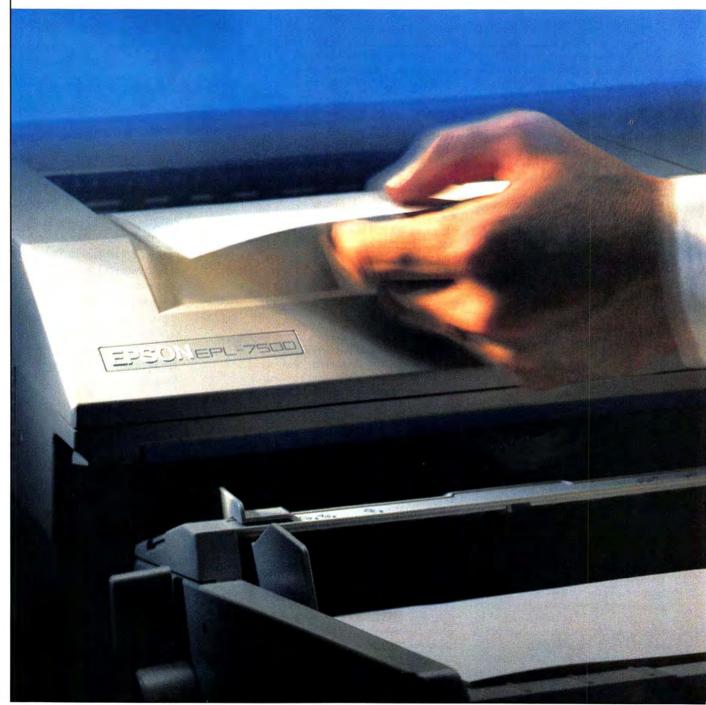


Passport 625 Miramontes St. Half Moon Bay, CA 94019 phone: 415-726-0280 fax: 415-726-2254



Please circle 59 on reader service card.

# Epson introduce advance in Post



Adobe and PostScript are registered trademarks of Adobe Systems, Inc. AppleTalk and Macintosh are registered trademarks of Apple Computer, Inc.

# es a truly rapid Script printing.

# The new Epson EPL-7500 for Macintosh.

All it took was a little RISC.

Introducing the Epson® EPL-7500 laser printer.

One of the first true Adobe® PostScript® laser printers

designed around a lightningfast RISC processor.

The result is significantly faster output.

It is also significantly better.

Thanks to true Adobe
PostScript—not a clone—
the EPL-7500 is able to produce razor-sharp text in 35

scalable fonts, plus equally impeccable graphics. Blacks are blacker and lines are finer, courtesy of the printer's unique MicroArt Printing technology.

All of which makes the EPL-7500 extremely well-suited for the most demanding desktop

publishing applications.

The EPL-7500 handles paper as well as it handles text and graphics. A 250-sheet tray comes standard,

a second is optional. Also standard are AppleTalk,
parallel and serial interfaces,
allowing the printer to work easily in both Macintosh\*

With the EPL-7500, the engineers of Epson have succeeded in raising the standards of laser printing

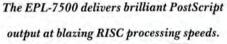
and PC environments.

for Macintosh, without raising the price.

But rather than take our word for it, compare for yourself. Chances are, you will come to the same conclusion.

Very, very rapidly.







Engineered For The Way You Work."



# Red Hot Ethernet Adapters For The Hot New Macs.

or the hot new Macs, Dayna introduces hot new Ethernet adapters. Using the latest Ethernet technology, our DaynaPORT™ cards for the Macintosh LC and IIsi are red hot performers. And for Macs like the Classic, our DaynaPORT E/Z hooks to Ethernet in a flash.

Dayna has Ethernet solutions for all Macs. We support 10BASE-T wiring as well as thin and thick Ethernet cables today, with future support for Apple's new Ethernet Cabling System.

We provide the best Ethernet technology at very affordable prices. And we stand by the quality and reliability of our products. That's why we guarantee them, not just for a few years, but for life.

So call us today at (801) 531-0203. And get them while they're hot.





### DaynaPORT Elsi \$399

Designed specifically for the Macintosh IIsi, our card does not require an additional, expensive adapter. It is the only Hsi card that sports a socket for a floating point Math Coprocessor chip. Featuring Bus Master direct memory access (DMA), it has the lowest chip count and highest performance and reliability in the industry.



### DaynaPORT E/Z \$399

For compact Macs such as the Classic, Portable or Plus, or any Mac without a free card slot, we have the fastest and easiest Ethernet connection around. This external connector box plugs into the printer port and communicates at high-speed with the Macintosh processor.



#### DaynaPORT E/LC \$399

The world's first Ethernet card for the Macintosh LC is a mighty midget. It is powered by the same Bus Master DMA technology as our Hsi card. Yet small as it is, there's still room for a math coprocessor socket.



We Connect People And The Computers They Use."

Please circle 122 on reader service card.



Ethernet is gaining popularity, but it's still expensive. Maybe that's why people keep looking for ways to speed up LocalTalk. The latest effort, LocalSwitch from Tribe Computer Works, is an accelerated 16-port LocalTalk hub. Each port gets 230.4 kilobits per second worth of network bandwidth to itself, for a total network capacity of 3.6 megabits per second. \$3,495. Keep your eve on this one.

## By Henry Bortman

Midget modem for Macs on the run: Outbound, maker of the Outbound Laptop System, now offers the Pocket Port, a 2,400-bps Hayes-compatible modem. Weighing only 2.4 ounces and literally small enough to fit into your shirt pocket, the Pocket Port requires no battery, because it gets its power from a telephone line. \$279.



**N**etWare news: NetWare 3.11 (formerly dubbed NetWare 386) and NetWare for Macintosh 3.0 are finally shipping. NetWare for Macintosh 3.0 integrates AppleShare-like file service and AppleTalk print spooling as part of its core technology. Novell says the new version should provide twice the performance of the current version, 2.15c. NetWare 3.11 costs \$3,495 for 20 users, \$6,995 for 100 users, and \$12,495 for 250 users. If you also want NetWare for Macintosh 3.0, add \$895 for 20 users and \$1,995 for 100 users.

DataViz is now shipping MacLinkPlus version 5.0, which offers new translators for Word for Windows, WordPerfect 2.0/Mac, MultiMate 4.0, FrameMaker, and Windows graphics. Version 5.0 also includes the new version of Dayna's DOS Mounter for one-stop DOS-to-Macintosh file swaps. \$199; upgrade for



registered owners, \$50. Want to toss your NeXT machine into the file-exchange picture? DIT's FloppyWorks enables a NeXT computer with a floppy drive to read from and write to Mac disks directly. It also contains filters for file translation between popular Macintosh and DOS applications. \$250.

**M**acs without Apple? It may soon — at long last — become reality. RDI Computer is selling Companion,

Mac-emulation software that runs on SPARCstations. According to RDI, any application that runs on an SE or Classic can run under Companion. At press time, Companion required an S-bus card with Mac Classic ROMs installed to function properly and cost \$1,695 (S-bus card included, but you supply your own ROMs). RDI expects some legal complications to have been resolved by the time you read this, so it can sell Companion as a software-only product for \$895. — Meanwhile, Nutek Computers is readying Macintosh-clone technology it says is Applelawyerproof. This technology is a combination of custom ROMs and system software that can run Mac applications but gives them a slightly different look: that of the Open Software Foundation's Motif interface, which is common on UNIX machines. All Nutek needs to do now is find a hardware manufacturer to develop its product into a usable computer — and keep Nutek company in the courtroom.

# "Color control in QuarkXPress gives me endless design possibilities."









# Josephine Rigg, Art Director Image, the Magazine of the San Francisco Examiner

"Working under deadline pressures at a newspaper, you generally don't have as much time as you'd like to 'play' with a design. But with QuarkXPress, I can scan in a color transparency, then crop it, screen it, rotate it — and see the results instantly on my monitor. And with all the color models QuarkXPress supports, I can create automatic drop caps and rules, or shade a background and try different colors until I find the one that works. This kind of color support gives me the freedom to experiment with design, and QuarkXPress does the rest."

The San Francisco Examiner has been serving the Bay Area since 1887. Image, a weekly magazine that includes news and lifestyle features of interest to Examiner readers, appears on Sundays.

If you want endless design possibilities from your page layout program, visit your local dealer for more information.

Please circle 409 on reader service card.

# Quark**XPress**。

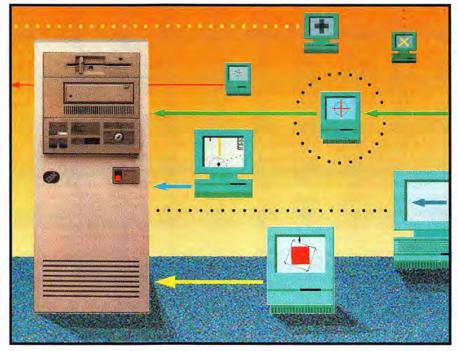
The Choice for Publishing Software Worldwide

QuarkXPress is a registered trademark of Quark, Inc. All other trademarks are the property of their respective owners.

# **The Mac-to-Mini Connection**

Connecting the Mac to IBM's midrange computers gives you minicomputer power with Mac ease of use.

By Teresa Elms



hen the Mac meets the minicomputer in the business world, the result is often confrontational. But things are smoothing out in a rather improbable quarter: the IBM midrange-computer market. Users of these business minicomputers are "speaking Mac" in a growing number of companies, thanks to a flurry of new connectivity products.

Midrange computers are business-oriented minicomputers. Minicomputers comprise the middle tier of computer power and price. They're more powerful and more expensive than desktop computers but are less powerful and less expensive than mainframes. IBM's current midrange computer is the AS/400. It supersedes the System/34, System/36, and System/3X (collectively known as System/3X machines), although these machines are still used widely. According to IBM, approximately 400,000 System 3/X and AS/400 minicomputers are installed worldwide. Attached to those systems are an estimated 5 million terminals a quarter of which access the data on the midrange host. This is a large market by any standard, and it's growing faster than the computer industry as a whole.

This growth is significant for Mac users. By connecting Macs to a midrange system, users gain access to large-system processing power, easy data exchange with PCs or Macintoshes

anywhere on a network, and the security of a centrally managed database. The Mac also brings advantages to midrange-computer shops, including user-friendly applications and its famous graphical user interface.

One of the earliest, most successful combinations of the Mac and IBM midrange computers was at Apple, which uses AS/400s for corporate information processing. Instead of the "dumb," character-oriented terminals traditionally connected to such systems, Apple uses a network of Macs. The Macs work independently of the AS/400s for tasks such as word processing and graphics, which the AS/ 400s don't do well. But the AS/400s provide computing horsepower for the high-volume number crunching needed to manage corporate order processing, accounts payable, and sales reporting. They also provide shared access to corporate databases. With a click of the mouse, users can access the best of both worlds.

#### **Making Connections**

To integrate the Mac into an IBM-midrangecomputer network, you need a fast, reliable connection to the midrange host. There are a few choices here. Most System/3X and AS/ 400 computers support these options:

Medium-speed (up to 19.2 kbps), asynchronous communications via an RS-232C serial port and a modem.

# BRIDGES INTEGRATION

- High-speed (up to 56 kbps), synchronous communications via an RS-232C or a variety of other serial interfaces to a modem or to digital phone lines. This is the standard IBM midrange-communications mode.
- Very-high-speed (1.2 megabytes per second) attachment via twin-axial cable, which is the wiring that connects dumb terminals and printers to an IBM midrange system.
- Connection via Ethernet LAN (localarea network), which is available on the AS/400 only.
- Connection viatoken-ring LAN, which delivers 4 to 16 megabytes per second the best communications performance available on IBM midrange systems.

To connect the Mac to a midrange system with any of these communications options, you must install a communications controller (such as a token-ring-LAN adapter or a 5250-emulation board) in one of the Mac's expansion slots or connect an outboard box (such as a protocol converter) to the Mac's modem port. The controller card or protocol converter then connects to the cabling system - such as the twinaxial cable in the building's walls - that carries data between your Mac and the midrange system. Current Mac-tomidrange connectivity products support eithertwin-axial ortoken-ring connections. Of these, the twin-axial connection is the more popular, because it's fast, reliable, relatively inexpensive, and available on all IBM midrange systems.

#### **Translating Mac to Midrange**

Establishing a connection between the Mac and a midrange system is like placing a phone call to France. If you dial the right

number with the right equipment, you can hear your French counterpart speak, but if you don't speak French, you can't communicate. Terminal-emulation software provides the Mac equivalent of a French interpreter. This software runs on your Mac and supports three key connectivity services: terminal emulation, printer emulation, and file transfer.

Terminal emulation. Terminal emulation lets the Mac communicate like the dumb, text-based terminals the midrange system understands. During this process, the Mac window the emulator runs in temporarily gives up its independent computing power and becomes a "slave" of the midrange system.

The midrange system sends character data — but not graphics — to a Mac window just as it does to an IBM 5250-series terminal. The midrange system codes this data in EBCDIC (extended binary-coded decimal interchange code) rather than in ASCII, so you require terminal-emulation software to translate the incoming data to ASCII equivalents the Mac can

display. Conversely, the midrange system expects to receive keystrokes from the Mac that map to the standard 5250-series keyboard, and it needs special function keys (such as Attention and Error Reset) that don't exist on the Mac. The terminal-emulation software on your Mac performs this keyboard-mapping function.

A note about selecting the right terminal-emulation software: Emulation software that works with IBM midrange systems does not work with IBM mainframes. Your Mac must emulate a 5250series terminal to be understood by midrange computers, and only midrange computers accept 5250 emulation. IBM mainframes require the much different 3270 terminal-emulation protocol. To confuse matters further, emulation software that works with IBM mainframes might work with an AS/400, but only if special hardware and software are installed on the AS/400 to support 3270 terminals and printers. (For more information on Mac-to-mainframe connectivity, see "Face to Face with Your Mainframe," February

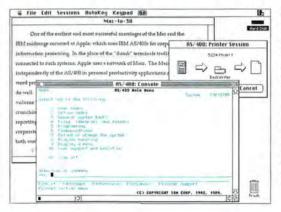


Figure 1: Connecting your Mac to an IBM midrange system lets you access the minicomputer's power without losing your Mac's intelligent features. You can run multiple midrange jobs in separate windows, view them concurrently on one or more monitors, and run a native Mac application (such as a word processor) at the same time.

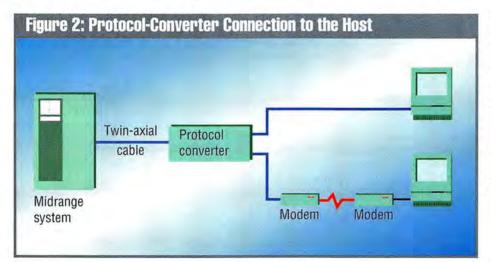


Figure 2: You can connect your Mac to a midrange system with a protocol converter — a box that connects to the modem port of your Mac and provides an interface to the midrange's twin-axial-cable network. Protocol converters work with any Mac model, and they can connect multiple Macs to a midrange system — but they're slow compared with other connectivity options.

'90, page 276, and "Mac-to-Mainframe Mating," January '90, page 260.)

Printer emulation. Printer emulation is an extension of terminal emulation: It translates the printer-data stream from the midrange computer into QuickDraw or PostScript commands that your printer understands.

You need to follow a few rules to get terminal or printer emulation to work. Most importantly, you need to specify a correct device address each time you configure a terminal or printer session on your Mac. (You can configure as many as seven sessions at a time.) The device address is a number the midrange system uses to route message traffic among hundreds of 5250 terminals. The midrange system permits only seven device addresses per midrange port, and because you can have more than one Mac connected to a port, you may prevent other users from signing on to the midrange system if you configure too many emulation sessions on your Mac.

File transfer. The final piece of the Mac-to-midrange puzzle — file transfer — is a two-step process. First the midrange system's EBCDIC codes must be translated to ASCII for downloading to the Mac and vice versa. Then the file-transfer software must reformat data to and from standard formats, such as tab-delimited ASCII.

File-transfer software usually comes in two parts: one for the midrange system and one for the Mac. You don't have to buy both halves from the same software developer. For example, a widely used file-transfer product for midrange systems is ETU (Emulator Transfer Utility), from Andrew, formerly called Emerald Technology. Because it runs on a wide variety of IBM midrange computers, many manufacturers write file-transfer software for desktop computers that works with ETU on midrange computers. But this isn't always the case: IDEAssociates' IDEAcomm Mac 5250-emulator board includes file-transfer software for both the Macintosh and the midrange system in one package.

#### The Best of Both Worlds

Terminal emulation, printer emulation, and file transfer may seem like primitive connectivity functions, but the result is a beautiful synergy of Mac and midrange strengths. For example, DOS terminal emulation requires that you give up your Macintosh's intelligent features—at least temporarily. At this point, the desktop computer becomes a character-oriented

terminal, dedicated to a single job and controlled by the host. But when a Mac is running under MultiFinder, a session with the host is just one job running in its own window. You can run multiple midrange jobs in separate windows, view them concurrently on one or more monitors, and run a native Mac application, such as a word processor, at the same time (see Figure 1). Midrange programmers, for example, can debug midrange source code in one window, watch the revised program execute in another window, and cut and paste between the midrange screens and a Mac document in a third window to create the program documentation.

The midrange system offers advantages such as advanced file-server capabilities and data safety to Mac users. The midrange security system, for example, automatically checks each user's authorization to access files or perform restricted operations. The midrange file-management system provides file- and record-locking services to prevent conflicts among multiple users as well as ensure that files aren't overwritten or destroyed. No matter how many users have access to a record, only one copy exists, so there aren't several versions of the same file. And finally, the midrange system can work as a data repository - because it's usually backed up to tape daily. This also lets Mac users archive data on the midrange system, which frees space on their hard disk.

Some Mac-to-midrange connectivity products bundle the communications link — usually an add-in board or converter box — with terminal-emulation and file-transfer software. In some cases, however, you must buy the software separately. The Mac-to-midrange connectivity products currently available are protocol converters and 5250-emulation boards (see Tables 1 and 2). Token-ring-LAN adapters are also emerging as an option.

#### **Protocol Converters**

Protocol converters are stand-alone boxes that act as translators between dissimilar computer systems. They connect to the Mac's modem port and translate ASCII communications (which the Mac understands) to EBCDIC, 5250-style, twin-axial communications, which the midrange system understands (see Figure 2). Because they require no internal hardware in the Mac, protocol converters are a practical way to connect Macs that don't have expansion slots (such as the Plus and the Classic) to an IBM midrange system. However, because they're limited



## Start The Music

Buy the EZ Starter Kit and get everything you need to make music with your Macintosh\*—and get some FREE extras!

With the EZ Starter Kit you receive both "The Book of MIDI" and a membership to PAN (the on-line MIDI music BBS) for free, a total retail value of \$190.

The kit includes:

#### EZ Vision™ Create your own music using Opcode's EZ Vision sequencing soft-

Opcode's EZ Vision sequencing software. Record your performance on a MIDI instrument or enter notes in one-at-a-time using your computer's keyboard and mouse. Click on a note and edit its pitch. Change trumpet parts to violins. Have the computer alter the notes.

computer alter the notes to play more accurately in rhythm. Anyone can create music! Retail value \$149

#### MIDI Translator™

Connect your Macintosh to any MIDI instrument. With 1 MIDI IN and 3 MIDI OUTS, this is by far the best MIDI interface value on the market today. Retail value \$59

#### The Book of MIDI™

Learn more about what MIDI (Musical Instrument Digital Interface) and electronic music are all about. This HyperCard stack makes it fun, through its interactive use of animation and sound. A MIDI instrument is not required to use this product. Retail value \$39.95

Call us at (415) 369-8131 for information.

OPCODE

3641 Haven, Suite A Menlo Park, CA 94025

\*Except for MIDI synthesizer and cables

Trademarks 17 Vision, Will Countries. The Raw of Wiles

Please circle 124 on reader service card.

### INTEGRATION

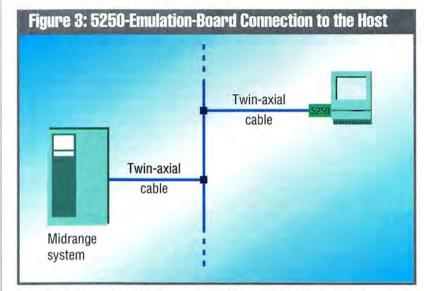


Figure 3: When you use a 5250-emulation board to connect to an IBM midrange computer, you work at the same fast data-transfer rate as the midrange system. The board occupies an expansion slot in your Mac and connects in a daisy-chain to the midrange's twin-axial-cable network. You can daisy-chain up to seven devices to one twin-axial port.

by the Mac's modem port to a top datatransfer rate of 19.2 kbps, they're slower than other Mac-to-midrange connectivity options.

The three protocol converters currently available are the Andrew MacMidrange TwinAxcess Series II and MacMidrange TwinAxcess Series III and the Perle Model 3i ASCII Workstation Controller from Perle Systems.

Andrew's MacMidrange TwinAxcess Series II has as many as seven serial ports, which lets you attach seven Macs to the same protocol converter and reduce costs per user significantly. It's also upgradable: You can start with a single port and add more as needed. The one-port model costs \$1,695; the seven-port model costs \$3,595. The Series III is a nonupgradable single-port model that costs \$1,295.

For terminal and printer emulation and file transfer on the Series II and Series III, you need to install Andrew's Boxer software (\$150) on the Mac, and ETU must be installed on the midrange for file transfer. Boxer provides a HyperCard interface to ETU that simplifies file transfers. Boxer lets your Mac emulate up to seven 5250 terminals, each in its own window, one of which can contain a printer-emulation session.

Boxer is much better than other terminal-emulation software, because it maps 5250 terminal functions to the Mac's extended keyboard. Macintosh users who

are unfamiliar with a 5250 keyboard will find that the extended keyboard's Help key, for example, now also functions as the midrange Help key. For midrange users who are unfamiliar with the Mac, Boxer offers a pull-down, tear-off menu with icons for special 5250 command keys such as System Request and Error Reset. You can select the desired key function from this menu or request an on-screen display of the current keyboard mapping. Boxer also lets you customize keyboard mapping and tear-off menus as well as create keystroke macros to automate such tasks as sign-on sequences.

The Perle Model 3i ASCII Workstation Controller, announced as this article went to press, connects one, three, five, or seven Macs to a midrange system. Depending on the number of ports you need, the cost ranges from \$1,995 to \$3,495. Perle's terminal-emulation software, PerleTalk, sells for \$225; you also need to have ETU installed on the midrange system for file transfers. PerleTalk allows up to seven communications sessions between the Mac and the midrange computer (one can be a printer session), and it lets you cut and paste between the Mac and midrange sessions.

Protocol converters can work with any Mac, and they can connect multiple Macs to a midrange system, but they're slow. If you need faster data transfer, 5250-emulation boards are the answer.

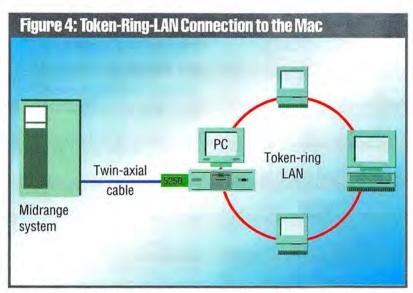


Figure 4: For speedy Mac-to-midrange connectivity, token-ring LAN adapters may be the best choice. The adapter occupies an expansion slot in your Mac and connects to multiple desktop computers networked in a ring. There's one hitch — you need an IBM PC to act as a gateway between the midrange system and the Macs on the LAN.

#### 5250-Emulation Boards

Internal 5250-emulation boards plug in to a Mac expansion slot and provide a direct twin-axial connection to the midrange system (see Figure 3). Like protocol converters, 5250-emulation boards translate ASCII communications to EBCDIC 5250-style communications. But unlike protocol converters, 5250-emulation boards can operate at the full rated speed of the midrange connection — 1.2 megabytes per second. Andrew and IDEAssociates make 5250-emulation boards for the Mac.

The MacMidrange MacTwin 5250emulation board is part of Andrew's Macto-midrange product series. It is bundled with InterAxcess software for terminal and printer emulation and file transfer (again, you need ETU on the midrange for file transfers). InterAxcess is identical to the Boxer software for Andrew's protocol converters, except that its hardware driver is different. The MacTwin board costs \$995 for the SE and LC and \$1,095 for the SE/30 and Mac II.

The MacMidrange NetAxcess is another 5250-emulation board from Andrew. It provides all the functions of the MacTwin, with a big difference: NetAxcess is a communications gateway that provides Mac-to-midrange connectivity for as many as seven Macs connected via LocalTalk, EtherTalk, or TokenTalk (collectively known as AppleTalk). You only

need to install the board in one of the Macs and simply load client software on the others. The software-only Macs can then communicate with the Mac that has the emulation board. NetAxcess, like TwinAxcess, is bundled with InterAxcess emulation software. Available for the SE, SE/30, and Macintosh II series, it costs \$3,995.

IDEAssociates' IDEAcomm Mac differs from the Andrew MacMidrange products in an important way: Its bundled file-transfer software, IDEAlink, supplies both the Mac and the midrange pieces of the file-transfer puzzle, so you don't have to buy ETU for the midrange. The Mac interface to IDEAlink is an easy-to-use HyperCard stack — either your own or the one that comes with the software.

IDEAlink supports only four communications sessions, not seven, but this limitation has the benefit of limiting the number of midrange device addresses consumed by greedy users. A real constraint, however, is IDEAlink's keyboard mapping, which isn't nearly as good as that of Boxer or InterAxcess. IDEAlink maps the keys as they appear on a 5250 terminal's keyboard, so if you've never seen such a keyboard, the program may be awkward for you to use. Another limitation is that IDEAcomm Mac provides printer emulation for Apple ImageWriters and LaserWriters only. If you use any other printer with your Mac, you're out of



### Personalize the Look & Feel of your Macintosh

Colorful, 3-dimensional windows, buttons, scrollbars, and cursors are now just a click away. With ClickChange in the control panel, the User is master of the "User Interface".



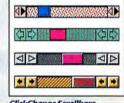
ClickChange Cursors. Replace the 5 factory-issue cursors with fully animated custom cursors. Put some fun into waiting (well, OK—at least ease the tedium). Design your own cursors, and amaze your friends!



ClickChange Buttons. Tired of those flat 50's style Mac buttons? Slip on one of our sleek, modern, 3D designs. It's what the next generation of computers is wearing these days.



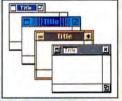
ClickChange Sounds. Set sounds to play when your Mac: starts up, shuts down, finishes loading all your INITs, beeps, inserts/ejects disks, and other major events. Import your own sounds and annoy your friends!



ClickChange Scrollbars.
Engineered to achieve maximum
performance using our exclusive
"proportional elevator" and "dublarrow" options. And, oh yeah...
they look really cool, too.



ClickChange Colors. Colorize your Mac's windows, menus, buttons, scrollbars and hilighting. Save color schemes to suit your every mood. Go ahead, live a little. Isn't color one of the reasons you're a Macil kinda' person?



ClickChange Windows. The perfect frame to display those fancy new 3D buttons and scrollbars in. Very stylish. Comes in a variety of colors and flavors. Dialog boxes and desk accessory windows get changed too.

#### ClickChange. \$79.95. Its Easy, its Compatible... and very, very Hip.

- Install by dragging ClickChange into your System folder.
- Requires: MacPlus or newer, System 6, and sense of humor.

In Color! (where available).



Dubl-Click Software
9316 Deering Avenue • Chatsworth, CA 91311
Telephone: (818) 700-9525 • FAX: (818) 700-9727

© 1990 Dubl-Click Software, Inc. ClickChange is a trademark of Dubl-Click Software, Inc. Macintosh is a registered trademark licensed to Apple Computer, Inc.

Please circle 395 on reader service card.

#### ColorSnap 32+

## **Get real!**

Real time video image capture for the real world.

\$99500

Most of the real world does not fit in a scanner. And. your time is precious. Use ColorSnap32+™ to immediately acquire a high quality image from any video source: live camera, still video camera, laserdisk or VCR. ColorSnap 32+ is REAL TIME and captures images with crisp, stop-action clarity and professional quality. Save files in PICT or TIFF, export them to image processing or page layout programs, or create your own image databases. Built-in modules capture images directly into Adobe's PhotoShop™ or LetraSet's Color Studio™ Also capture and attach stereo sound to your images with the Audio Option (hardware and software), and use the Compression Option (software) to dramatically reduce the size of your image files.

> ColorSnap 32+: \$995 and available now! Call us at (503) 626-2291 for details.

ColorSnap 32+ can be bundled with still video cameras from Canon, Sony or Panasonic. Call us for pricing.

For use with the Macintosh™ II family of computers.



**C**mputer Friends, Inc.

14250 N.W. Science Park Drive Portland, OR 97229 (503) 626-2291 Fax (503) 643-5379

Images courtesy of Sony Corp. Still Video Division

Please circle 64 on reader service card.



with PowerDraw, accepted worldwide as the professional 2D CAD standard for the Macintosh. Fast. Intuitive. Elegant.





For free brochure, call Engineered Software. 1-919-299-4843. In Canada, call Evoy & Associates. 1-204-453-8111.

Please circle 44 on reader service card.

218 May 1991 MacUser

## INTEGRATION

#### For some users, the productivity gained by the Mac-to-midrange connection transcends the cost.

luck. Versions of the IDEAcomm Mac board are available for the Mac SE for \$995 and for the Mac II for \$1,095.

#### **Token-Ring LANs**

An emerging alternative for Mac-tomidrange connectivity is the token-ring LAN. Token-ring LANs use a communications protocol that prevents network tieups by passing a token, or special authorization signal, among computers connected in a ring. Only the computer with the token is allowed to broadcast over the network. This means that all the computers on the network are peers and you don't have the master/slave relationship of other IBMmidrange communications methods, such as twin-axial. Token-ring LANs have another big advantage: With data-transmission rates of 4 to 16 megabytes per second, they're the fastest communications medium available.

The AS/400 and some System/3X models can attach directly to a token-ring LAN when the correct adapter card is installed. The Mac also needs a card to connect to the same LAN. Unfortunately, to connect to a token-ring LAN, the midrange must be connected to a PC rather than a Mac (see Figure 4). The midrange can connect to the PC via a token-ring-LAN adapter, twin-axial-workstation controller, or serial communications port. Although you can't directly connect a midrange computer to Macs in a LAN, it appears that software being developed by Apple will soon enable a direct connection and should make it easier for Macs and midrange computers to share the advantages of token-ring LANs.

#### The Bottom Line

Protocol converters, 5250-emulation boards, and token-ring-LAN adapters provide a variety of Mac-to-midrange connectivity choices. But power has its price: These options can cost \$500 to \$1,300 per user. Until these prices go down, evaluate your connectivity requirements carefully. For some users - such as software developers and documentation specialists - the productivity gained may transcend the costs.

## Publish-It! Easy In Less Than an Hour.

The all-in-one desktop publisher for the rest of us. Makes your document design fast, easy and fun!





#### Everything is Included.

Now you can bring words and graphics together to express your ideas like never before! Write a document, check the spelling, mix and match type styles, add graphics, and print it out, all in a few simple steps - all with one easy-to-use program. And get professionallooking results - every time:

- A Fully Integrated Word Processor
- A 112,000-Word Spell Checker
- A 240,000-Word Thesaurus Advanced Page Layout
- Built-in Drawing & Painting Tools A Quick-Start Mini-Manual
- 72 Sample Page Layouts

#### Special "What-if" Design Features.

Experiment with document design all you want. Easy's "Libraries" and Proxies let you alter page elements instantly making changes and experimentation easier than ever before. When you're happy with the results, save it as your final document.

#### Automatic Everything.

If you're not sure about which type style is best, Publish It! Easy will automatically select the type for you. Change the shape or size of your text area, and Easy will automatically reflow the text to fit. Automatic headlines and subheads, automatic indentation, book binding margins, page numbering, on-line help. It's all automatic. You won't have much to learn or to do!

#### Publish It! Easy

We make desktop publishing easy. And at \$249.95 (Suggested Retail), very affordable. In fact, with our 60-day full money-back guarantee and free 60-day technical telephone support, downright unbeatable!

#### TIMEWORK

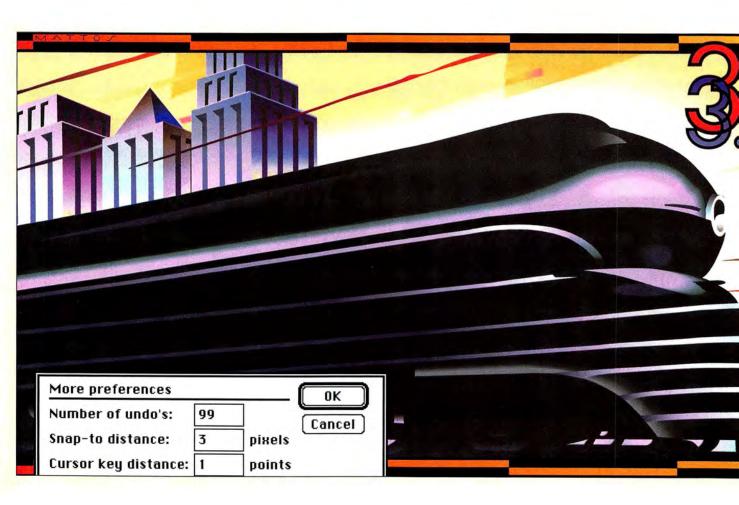
See your favorite Dealer or order direct from Timeworks, 444 Lake Cook Rd., Deerfield, IL 60015. Or call 1-708-948-9206. Fax: 1-708-948-9212.

PUBLISH IT! is a trademark of Timeworks, Inc. © 1991 Timeworks, Inc. All Rights Reserved. All other trademarks are of their respective companies. \*Not compatible with Macintosh 128K or 512K machines.

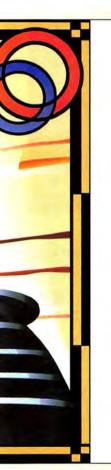


#### BRIDGES INTEGRATION

	Andrew MacMidrange TwinAxcess Series II	Andrew MacMidrange TwinAxcess Series III	Perle Systems Perle Model 3i ASCII Workstation Controller
List Price	1 port, \$1,695; 2 ports, \$1,995; 4 ports, \$2,695; 7 ports, \$3,595	\$1,295	1 port, \$1,995; 3 ports, \$2,495; 5 ports, \$2,995; 7 ports, \$3,495
Comments	Upgradable from one to seven ports. Requires emulation software on the Mac and file-transfer software on the midrange computer.	Single-port model. Requires emulation software on the Mac and file-transfer software on the midrange computer.	Upgradable in two-port increments. Requires emulation software on the Mac and file-transfer software on the midrange computer.
Emulation software/price	Boxer/\$150	Boxer/\$150	PerleTalk/\$225
Host file-transfer software	ETU (Andrew)	ETU (Andrew)	ETU (Andrew)
Keyboards supported	Standard and extended	Standard and extended	Standard and extended
Printers supported	Any printer with standard printer driver	Any printer with standard printer driver	Any printer with standard printer driver
Macs supported	Plus and later	Plus and later	Plus and later
Company	Andrew Corp. 6034 W. Courtyard Dr., Suite 100 Austin, TX 78730 (512) 338-3000	Andrew Corp. 6034 W. Courtyard Dr., Suite 100 Austin, TX 78730 (512) 338-3000	Perle Systems 630 Oakmont Lane Westmont, IL 60559 (708) 789-3171



	Andrew MacMidrange MacTwin	Andrew MacMidrange NetAxcess	IDEAssociates IDEAcomm Mac
List Price	SE and LC, \$995; SE/30 and II, \$1,095	\$3,995	SE, \$995; II, \$1,095
Comments	Excellent printer support. Includes terminal-emulation software; requires ETU on the midrange system for file transfer.	Provides AppleTalk access to midrange systems. Includes terminal-emulation software; requires ETU on the midrange system for file transfer.	Includes file-transfer software for both the Mac and the midrange computer.
Host sessions per Mac	7	7	4
Printer sessions per Mac	1	1	1
Emulation software	InterAxcess	InterAxcess	IDEAlink
Host file-transfer software	ETU (Andrew)	ETU (Andrew)	IDEAlink
Keyboards supported	Standard and extended	Standard and extended	Standard and extended
Printers supported	Any printer with standard printer driver	Any printer with standard printer driver	Apple ImageWriters and LaserWriters
Macs supported	SE, SE/30, LC, II	SE, SE/30, II	SE, II
Company	Andrew Corp. 6034 W. Courtyard Dr., Suite 100 Austin, TX 78730 (512) 338-3000	Andrew Corp. 6034 W. Courtyard Dr., Suite 100 Austin, TX 78730 (512) 338-3000	IDEAssociates 29 Dunham Rd. Billerica, MA 10821 (508) 663-6878



## over Illustrator is not for what it can do, but for what it can undo.



New Aldus FreeHand\* 3.0 gives you more freedom to experiment. Because, unlike any other design and illustration software, Aldus FreeHand gives you "Undo" and "Redo"

commands for up to 99 steps. With Adobe Illustrator\* you only get one.

And that simply gives you more confidence to explore greater design options with Aldus FreeHand.

The new on-screen "Colors," "Styles," and "Layers" palettes also make it easy to experiment with different colors, lines, fills, and graphic styles with a quick click of the mouse. And while you are experimenting, you'll appreciate its smoother and faster drawing abilities, as well as its enhanced text and graphic capabilities.

To receive a free brochure, call 800-333-2538, Dept. 3M.

To upgrade, call 206-628-2320. And find out everything new Aldus FreeHand 3.0 can do and undo for you.



Aldus FreeHand gives you the option of drawing in a color Preview mode (left) so you can see what you're doing. You can draw only in a keyline mode (right) with Illustrator.



# Never before has so much been available to so many for so little.



Now that the new Macintosh you've always wanted is finally within reach, you'll no doubt also want all the software you can get your hands on.

That would be Microsoft Works.

Works comes with a word processor

for reports, memos and letters.

There's also a spreadsheet for number-crunching and business graphics. A database for managing lists. Communications capabilities. And, of course, drawing tools (after all, this is a Mac®).

Works is powerful, easy to learn and marvelously affordable. And now it comes with a free Small Business Success Kit—a \$120 value\*. For the dealer nearest you, call (800) 541-1261, Dept. P61.

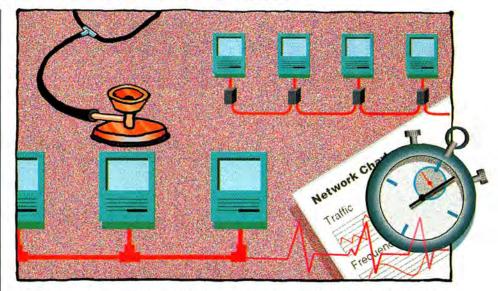
Then go get that Mac.Get Microsoft Works. And get going.

Microsoft<sup>®</sup>
Making it all make sense

## **Preventive Medicine**

Give your network a complete physical while it's healthy. The information you gather will help you recognize and treat network ailments.

By Kurt VanderSluis



ne reason network troubleshooting is so difficult is that it doesn't involve any of your senses. When a network is "sick," it looks, smells, feels, and sounds exactly the same as when it's healthy. By contrast, if your car's engine breaks down, you can usually diagnose the problem by sight, smell, feel, or sound.

Your familiarity with the way the car normally behaves makes pinpointing problems much easier. For example, you've heard your car's engine hundreds of times before, so you know what it should sound like. This reference point can be invaluable when trouble strikes.

Because a computer network doesn't display signs of its physical fitness, you must rely on data-gathering tools instead. To troubleshoot your network quickly and accurately, you should reach the point where the information you gather is as familiar to you as the sound of your car's engine. To gain this familiarity, use your troubleshooting tools *before* your network develops a problem. By running tests when the network is healthy, you'll have "normal" data to compare against the results you get when the network's in trouble.

For example, last month we talked about the PET (progressive echo test), which sends a signal to points progressively farther away on the internet. By seeing how long the signal takes to bounce back to your location from each node, you can locate the source of a network malfunction. The echo test produces numerical data that indicates the reliability and the speed for the round-trip echo. If an echo test tells you that a round trip to another node takes

an average of .04 seconds, you need to know whether that's normal or not. If you test the network only after it breaks down, you won't have a set of normal data against which to compare the results. Therefore, you should first run the echo test while the network is healthy. By keeping records (such as the graphs in last month's article), you'll have reference points to use when things go wrong.

You should perform other preventive tests to develop a sense of what normal data looks like and think about what the information means and what it tells you about the network. In addition to the PET, there are three other sets of benchmarks you should perform, using the following troubleshooting tools:

Traffic-monitoring tools can show you how busy the network is during typical transactions. Using programs such as Farallon's Traffic-Watch or the tools that come with Farallon's StarController or NuvoTech's TurboStar, watch how the network responds when you send a file to the printer, download a file from the server, or retrieve some data from a database. If your traffic-monitoring tool can produce a "skyline chart" of traffic density over time, look at it carefully and determine what caused the peaks and valleys. Get a feeling for which network events correspond to various traffic patterns, and you'll be better prepared to interpret the patterns in case of trouble.

Packet-monitoring tools—the AG Group's EtherPeek or LocalPeek, for example, or Neon's Netminder Ethernet or Netminder LocalTalk—tell you what kinds of data packets are on the network at any given time.

# So many colors. So little time.



When you need brilliant color, and you've got a tight deadline, the UC300 color scanner really delivers. By using a single light source, which allows your images to be scanned with the greatest accuracy, and our state-of-the-art buffering system, which cuts down on scanning time, you get fantastic color images every time... on time. When you need line art, 256 gray levels or 24 bit color, with the UC300, a last minute crunch becomes a two hour lunch. For your IBM PC, PS2 or Macintosh.



#### **COLORFUL WAYS TO MAKE YOUR LIFE EASIER**

UMAX TECHNOLOGIES INC. 2352 WALSH AVENUE SANTA CLARA, CALIFORNIA 95051 408-982-0771 800-562-0311 IBM AND PSZ ARE REGISTERED TRADEMARKS OF INTERNATIONAL BUSINESS MACHINES, MACINTOSH IS A REGISTERED TRADEMARK OF APPLE COMPUTED INC.

Please circle 177 on reader service card.

### TROUBLE SHOTS

Packets come in many forms, containing different types of data. They convey messages ranging from "Where are the printers?" to "Are you there?" to "Here's some data." Run EtherPeek or Netminder, and watch the variations that occur when someone boots a Mac, has an AppleShare session with no activity, or receives a mail message from the server.

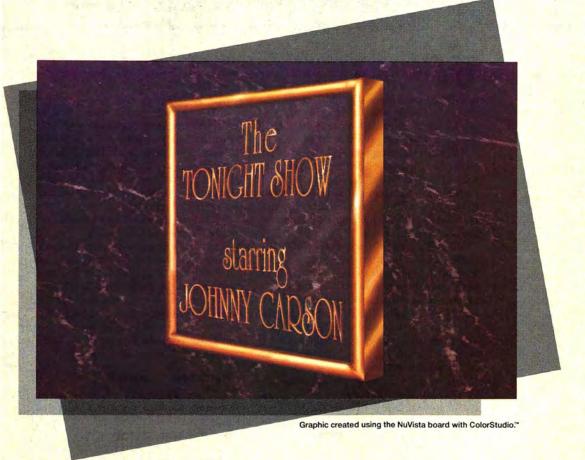
The Addison-Wesley book Inside AppleTalk describes all the packet formats, and if you're persistent, you can eventually understand what all that hexadecimal gobbledygook means. If you carefully study the packet patterns, you can determine when packets are missing and if there are too many of one kind or not enough of another, For example, the Mac emits a special packet when it first boots, and it should emit it only once. If a Mac is sending out this boot packet repeatedly, something is definitely wrong. If you don't use packet-monitoring tools on a healthy network, you don't stand a chance of interpreting the results when the network breaks down. Don't be discouraged by the difficulty of deciphering packets - it really does get easier with experience. There's also no better way to familiarize yourself with how a network works than by reading the packets.

Information-gathering tools such as Technology Works' GraceLAN and CSG Technologies' Network Supervisor can provide a variety of information about each machine on a network. For example, these tools can tell you what type of Mac is on a particular node and what version of the System it is using, how much memory it has available, and what INITs and applications are running. Gather this information when the network is healthy, and keep it so you'll have reference points whenever the network runs into problems.

NetAtlas, a network-mapping product soon to be released from Farallon, has a data-comparison feature that can automatically compare current network information against previously gathered data and report the differences. It notifies you if new network-ID numbers have appeared, if old ones have disappeared, if node numbers have changed, and so forth. By studying the differences, you can see which changes are normal and which aren't.

Remember, network troubleshooting involves comparing what *is* happening to what *should be* happening. Learn what data to expect under normal conditions, and you can spot problems more quickly and restore an ailing network to health in record time.

"Truevision NuVista. brings you ultimate creativity at a reasonable cost."



The Post Group uses a Truevision NuVista video card to capture their ideas and shape them into high quality productions. The same power can transform your Mac®II into a broadcast-quality video production system.

And now with advanced features like chroma-keying and enhanced video overlay on the Truevision NuVista+, it's easy for you to communicate in ways more exciting than ever before.

For as little as \$2,995, the Truevision NuVista+ provides everything you need to convince your audience with a creative, professional product.



7340 Shadeland Station, Indianapolis, IN 46256
INTERNATIONAL: Canada 416/940-8727 France 33-1-3-952-6253 Italy 39-2-242-4551
U.K. 44-628-77-7800 West Germany 49-89-612-0010 Other international 617/229-6900

ColorStudio is a trademark of Esselte Pendaflex Corporation in the United States, of Letraset

Canada Limited in Canada and of Esselte Letraset Limited elsewhere. Macintosh\* is a registered trademark
of Apple Computer, Inc.

Please circle 175 on reader service card.



Linda Rheinstein The Post Group Los Angeles, California

"Advanced graphics on the desktop is here. You can't ignore it. And you shouldn't. The benefit is more power to create."

Call 800-858-TRUE For more information

@1991, Truevision, Inc.



## **Do-It-Yourself Mac Repairs**

The author of
Macintosh Repair &
Upgrade Secrets
shares his top ten tips
for fixing the Mac.

By Larry Pina

hen manufactured goods were scarce, every repair involved fixing, mending, and making the best of what you had. Today, manufactured goods are so modular that once you've isolated the problem, most repairs merely involve removing the suspect module and replacing it with one that works.

The Mac is no exception. As long as you use some common sense and don't try to do anything risky or beyond your capabilities, you can probably do simple repairs. Even if you can't fix it yourself, you'll save time and money by being able to identify the faulty component, remove it, and send it to be serviced.

Most of the repairs I describe concern the Mac II, IIx, IIcx, IIci, and IIfx, which are easy to open and whose components are logically laid out and fairly simple to remove and replace. These Macs all have a disk drive, a hard drive, a motherboard, and a power supply. The II, IIx, IIcx, and IIfx also contain a video card (the IIci has built-in video circuitry). Figures 1 and 2 show how the layout of the Mac II, IIx, and IIfx differs from that of the IIcx and IIci.

Before we begin, there are a few caveats. First, if your Mac is still under warranty, leave repairs to your dealer. Because the new Macs (the IIsi, LC, or Classic) are still under warranty, I don't include them in this article.

Second, several of these tips require that you send Mac components to be serviced once you've diagnosed the problem. A third-party service center may cost less than your Apple dealer (I've included typical third-party charges for some repairs), but make sure you find a reputable company. Get recommendations from other Mac users, and ask for testimonials.

And finally, although some of these repairs are easy to do, others require some technical knowledge and specialized equipment. A few rules: Don't attempt *anything* you aren't comfortable with, shut down before opening the case, and handle all components with the greatest care. Now, let's get started.

#### Floppy-Disk-Drive Problems

1.Good 800K floppy disks suddenly become unreadable, and you can't initialize blank floppy disks. Check to see that the ribbon cable connecting the floppy-disk drive to the mother-board is firmly seated. There's also a chance that the drive has dirty heads. You can buy cleaning diskettes from your local computer store—they look like regular diskettes except that they have a felt disk instead of a plastic one. Insert the premoistened cleaning diskette into the drive, and wait the prescribed time. [The jury's still out

on the merits of cleaning diskettes. For a full discussion of their pros and cons—plus how to use them—see Help Folder, March '91, page 266.—Ed.]

2. You have the problem described in No. 1, cleaning hasn't solve the problem, and other floppy-disk drives connected to the same computer work fine. You (or someone else) may have damaged the heads by forcibly removing a stuck disk. You can't fix this yourself, but you can remove the drive to have it repaired.

The floppy-disk drives on the II, IIx, and IIfx are fastened to a horizontal mounting plate by a single Phillips-head screw. Unplug the data cable, remove the screw, and take out the drive. On the IIcx and IIci, this operation is not as straightforward: Unscrew the Phillips-head screw on the corner of the floppy-disk/hard-drive assembly, and remove the power supply and cables, and the two drives will pop out. Rebuilding an 800K drive (with new heads) costs about \$100.

#### **Hard-Drive Problems**

3. You can't get past the Welcome to Macintosh message when you start up. This symptom can indicate that you have a corrupted Finder. Start up from a floppy containing the same versions of the System and Finder that are on your hard drive, drag a fresh copy of the Finder from the floppy to the System Folder on the hard drive, and choose Restart from the Special menu. If the hard drive boots normally, the problem is fixed. (You can also try installing a new System, using the System-installer disks that came with your Mac.)

4. You can't get past the blinking question-mark icon, and you're sure that the hard drive is spinning. Check for any SCSI problems such as an ID conflict, a termination problem, or a loose cable. To check the SCSI-ID number, look on the switch on the back of each device or use a utility such as SCSI Probe (a freeware utility available from Zmac and other on-line services and user groups). Each device should have a unique number from 0 to 6, inclusive.

When checking termination, be aware that only the first and last SCSI devices on a chain should be terminated. Some products are shipped with internal termination, however, and if you have one of these devices in the middle of a chain, you'll have problems. Check with the manufacturer to find out if a device is internally terminated. If it isn't,

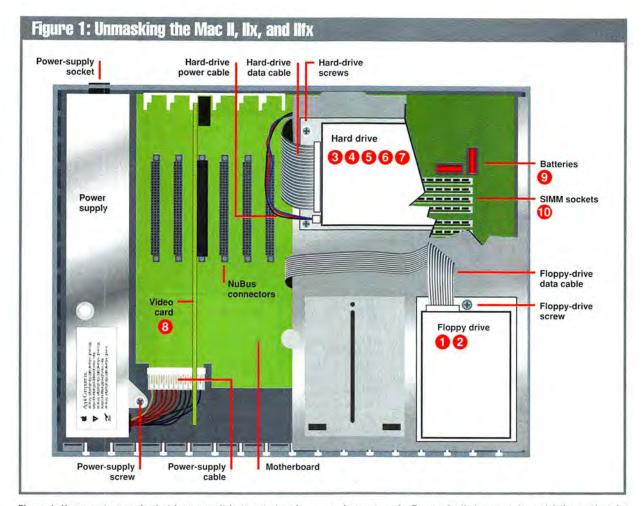


Figure 1: You may be surprised at how easy it is to get at various components inside your Mac, such as the floppy- and hard-disk drives

and power supply. For repairs that you can do, match the numbers by the components with the corresponding repair tips.

check to see if there is a 50-pin flowthrough terminator plug on the SCSI connector. Remove the plug if the device is in the middle of the chain; add a plug if it's the first or last device on the chain.

5. You can't get past the blinking question-mark icon, and you've ruled out SCSI problems. You may have corrupted boot blocks. First, try using a hard-disk-recovery utility such as Norton Utilities for the Macintosh to examine the disk. (For a complete guide to hard-disk recovery, see "Surviving the Crash: Hard-Disk Recovery," April '91, Buyer's Guide page 42.)

If you still have problems, your next step is to try SCSI-formatting software, such as Silverlining from LaCie or Format/Partition from NuvoLabs (don't use Apple's HD SC Setup — it doesn't have the tools you need for this job). Start up from a floppy disk containing the SCSI-formatting software. If it recognizes the

drive, there's a good chance you can fix it. Look for a menu item that verifies blocks and runs a drive test. If a dialog box at the end of the test reveals that bad blocks were found and successfully reassigned, try to mount the drive (your software may let you do this from within the program). If you're successful, you'll have solved the problem and saved most of your data. If you can't mount the drive, your formatting software gives you a couple of options: reinitializing (which overwrites the directory) or reformatting (which overwrites the entire drive and tests the blocks). You'll lose all your data if you do either of these operations, so make sure you back up your files regularly.

6. You can't get past the blinking question-mark icon, and you can't hear the internal hard drive spinning. If this happens, the bearing lubricant may have thickened or the heads may have stuck to the medium. Either way, there's a good chance you can fix it. On the II, IIx, and IIfx, the hard drive is fastened to a metal mounting bracket by two Phillips-head screws. (On the IIcx and IIci, the hard drive isn't screwed in, so you can simply pop it out.) Unplug the data and power cables, remove the mounting screws if necessary, and briefly place the drive in direct sunlight. More often than not, a few hours of the sun's heat will thin the lubricant or free the heads, at which point the drive should work fine. A variant on this procedure is to carefully turn the computer upside down or on its side and leave it somewhere warm (about 70 degrees) overnight.

7. You can't get past the blinking question-mark icon; the drive makes strange scraping noises, the stepper motor ticks, or the drive isn't spinning, and you have reason to believe it's not a power-supply or motherboard problem. Send the whole drive module to be

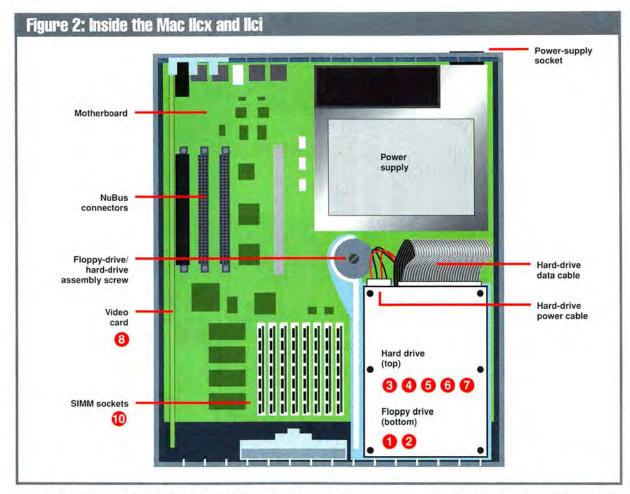


Figure 2: The inner workings of the Macintosh Ilcx and Ilci are similar but not identical — the Ilci also includes video circuitry on the

motherboard as well as room for a ROM upgrade and cache card. The numbers refer to repair tips that you can use.

repaired. Some repair shops will retrieve all or some of your data. Prices vary with drive size.

#### **Video-Card Problems**

8. You see colored blotches, static, or buzz lines on the monitor display. Find out if the monitor is in trouble. Connect it to another Mac, and see if the problem persists. If the monitor's OK, then the problem is in the video card, which is plugged into a NuBus slot. (With a IIci with no external video card, the problem may be the video circuitry on the motherboard). To remove the card, turn the power off, wait at least 20 seconds, and then pull straight up on the card. Component-level repair of a video card costs about \$115.

#### **Power-On Problems**

9. Pressing the power-on switch intermittently fails to start your Macintosh II, IIx, or IIfx. The usual problem is a weak battery on the motherboard. On the II, IIx, and IIfx, there are two ½ AA lithium cells located under the drive bay. (One battery powers the power-on key, and the other powers the clock and PRAM. The IIcx and IIci's power-on keys are powered by a 5-volt "trickle" line on pin 10 of the power supply.)

To test the cells, press the power-on key and read the batteries' voltage with a digital multimeter (available from Radio Shack or other electronics-supply stores for about \$40). Good cells generally read from 3.2 to 3.7 volts and weak cells read from 2.3 to 3.2 volts. Any cells that fall to less than 2.15 volts are considered dead. Newer Macintoshes have a battery box that lets you simply pop the batteries out to replace them. On older Macintoshes the original batteries are soldered in, but you may be able to find a dealer who can retrofit your board with a removable battery holder.

#### **SIMM Problems**

10. You see a blinking question-mark icon or hear an error tone on startup. Immediately after their power button is pressed, all Macs run an internal diagnostic program. The more RAM you have, the longer it takes. If the Mac passes the test and there's a startup disk on-line, the computer boots to the desktop. Otherwise the blinking question-mark icon is displayed. If you hear an error tone when you start up a Mac II, it can mean SIMM problems. Test the SIMMs by replacing them with another set. Your SIMMs may be defective, in which case you need to replace them, or they may be too thick or too thin for the socket. It is possible to tighten the contacts on the sockets, but this is a sensitive operation and you need to use extreme care. To tighten the contacts, use a small, delicate tool such as a jeweler's screwdriver to move the contact wires closer together.

# Tomorrow's Upgrade For Your Mac Is Only

A MacWarehouse Expansion Kit will dramatically increase the power of your Mac. And our fast, reliable overnight service will have your Kit in your hands tomorrow!

#### MORE BRAIN POWER FOR YOUR MAC

Never again will you have to quit your word processor just to answer a question about a spread-sheet. Install extra memory and you can leave your letter open while you refer to last month's sales figures. You can edit those monstrous scanner files with advanced graphics applications or develop your own custom HyperCard stacks. More memory means more power at your fingertips.

#### PLUG IN INSTALLATION

Adding memory doesn't require technicians in lab coats. Just open your Mac, slide out the main circuit board and plug in your SIMMS. Our FREE video will give you STEP-BY-STEP installation instructions. Every type of Mac is covered and we think we've made it a breeze.

#### WHAT DO I NEED?

Our helpful sales and technical staff is standing by to answer any questions and take the mystery out out of memory upgrades. Memory cards come with one megabyte on each card and are usually sold in pairs - (2 @ \$59 ea.).



To upgrade a 4-socket Mac Plus or SE to this amount of memory.	Do this: (Install in multiples of two only)
2 MB	Remove all four existing 256K SIMMs, install two 1 MB SIMMs, leave two sockets for future expansion.
2-1/2 MB	Remove only two 256K SIMMs, install two 1 MB SIMMs.
4 MB	Replace all four 256K SIMMs with four 1 MB SIMMs.
To upgrade an 8-socket Mac II, IIx, IIcx, oe SE 30 to this amount of memory.	Do this: (Install in multiples of four only.)
4 MB	Remove all four existing 256K SIMMs, install four 1 MB SIMMs, leave remaining sockets for future expansion.
5 MB	Keep existing 256K SIMMs, install four 1 MB in remaining sockets.
8 MB	Remove all four 256K SIMMs, install eight 1 MB SIMMs.

To open your Mac Plus or SE, you'll need a specially designed tool - it's available from us as part of a handy tool kit for just \$9.

#### WHAT YOU NEED TO KNOW

Memory chips come factory-installed on plug-in cards, called SIMMS (Single Inline Memory Modules). Each one megabyte SIMMS card holds eight top quality, memory chips. We carry chips by all the major manufacturers like Texas Instruments, Intel and Samsung. We also carry the full line of Dove memory products.

Prices can vary a lot, based on quality, speed and demand. At press time our price for

#### staff will tell you what you need and help you make your choice an easy one.

#### SPEED

1MB, 100ns SIMMs is \$59. Please call for the

very latest prices and availability. Our sales

Do you need 80, 100 or 120 Nanosecond (ns) chips? Nanoseconds are billionths of a second, so an 80 ns chip responds faster than a 100 ns chip. The original Mac used relatively slow 150 ns memory chips. The 68020 processor reads 120 ns (or faster) chip, and the 68030 Macs

#### **OVERNIGHT DELIVERY**

Place your order by 12:00 am (E), weekdays and we'll deliver overnight for just \$3.00. There's never been a better time to consider a memory upgrade. Call our toll-free number now and tomorrow morning your Mac will be off to a brand new start.

like the speedier model,

#### MadVAREHOUSE 1-800-255-6227

Call toll-free Twenty-four hours a day, seven days a week. Inquiries: 1-908-367-0440 Fax: 1-908-905-9279

#### MACWAREHOUSE 30-DAY MONEY BACK GUARANTEE

If, for any reason, you are dissatisfied with your MacWAREHOUSE Memory Kit, you may return it for a full refund within thirty days of purchase. All you have to do is call us for a return authorization number and return this product, postage paid, in its original condition, with the original packaging and documentation.

**ONE YEAR WARRANTY.** MacWarehouse also guarantees its Memory Kits against manufacturer defects for one year from the date of purchase. We will repair the item or replace it at our discretion.

SIMMs prices vary. Call for latest information.





<sup>&</sup>quot;Limited Offer! Free video with purchase of 2 or more SIMMs.

#### GUARANTEE

Many of our products come with a thirty day money back guarantee, if you are not completely satisfied. Ask for details when you place your order.



ACCESSORIES

Toner Cartridge - LaserWriter II .. Basic Needs, Inc. ACC0356 Dust Cover - Mac II & Extended Keyboard

> HardTops ImageWriter II Cover HardTops Mac Extended Keyboard Cover 15 HardTops Mac Plus Keyboard Cover ...... 15

(BASF) Disks - DS/HD 1.44 Meg (box of 10)

Disks - Preformatted DS/DD (box of 10) Disks - Preformatted DS/HD (box of 10)

MacIlex/ci Monitor Stand

Disks - DS/DD (box of 10)

MacTilt II - 13" Color RGB ... MacTilt Plus/512 - Platinum

MacTill SE, SE/030 - Platinum

MacLuggage™ Plus Carrying Case MacLuggage™ SE Carrying Case Monitorware Apple RGB Case .....

Ultimate SE Carrying Case - Black Ultimate SE Carrying Case - Navy

Maccessories SE Radiation

Fanny Mac QT.

SE Silencer

Anti-Glare Filter System Saver Mac - Platinum

BND0013 PowerUser Carrying Case w/Free Cap .....

Ultimate Classic Carrying Case - Black .... Ultimate Classic Carrying Case - Navy ....

Command Center

HardTops Mac Standard Keyboard Cover 15

American Power Conversion

110 SE LIPS

370ci UPS

(grey nylon)

Utility Pac

ACC0411

ACC0451

Apple ACC0336

ACC0348

ACC0347 ACC0345

ACC0346

ACC0466

ACC0351

B.A.S.F MED0030

MEDO041

MED0040

MFD0029

ACC0469

ACC0128 ACC0009

ACC1070

ACC0327

ACC0427

ACC0440

ACC0529

ACC0528

ACC0459

ACCD097

ACC0055

PowerUser<sup>IM</sup>

Kensington

**Mobius Products** 

I/O Design, Inc.

Ergotron

Curtis

Adobe Type On Call Library on CD-ROM (Adobe Systems) The entire collection of Adobe Fonts and

(See details below)

more on one CD-ROM disk! Each font is password protected; to unlock the font you need, simply call MacWAREHOUSE, pay the purchase price and we give you the password right over the phone. No more waiting for packages to arrive your new font is available to you immediately! You can choose to purchase an entire type family, or just the particular typeface you need.
Purchase price of the CD-ROM disk includes two free fonts and Adobe Type

Manager. \$49. FON 0351

239

75 79.

79.

63.

55

ony ED0031	Disks - 1,44 Mb High Density (3.5) 24.
ED0003	Disks - DS/DD (box of 10)
argus,	Ltd.
CC0251	Imagewriter II Carry Case (black)
CC0438	Maclicx/ci Carrying Case - Black79.
CC0252	MacPlus/SE Carrying Case (black) 65.
CC0250	MacPlus/SE- Ext Keyboard Carrying Case 79.
CC0482	Premier Leather Case

After Dark 2.0

(Berkeley Systems)
After Dark 2.0 prevents screen burn-in—and does it with style. In fact, any style you choose, including lightning bolts, meteors, abstract art, crawling worms, a jump to light speed, or a basic dimmer. New modules include a special version of Fish!, plus Flying Toasters, Super Nova, and Spotlight. Many modules now include sound effects. A major enhancement is System IQ, which monitors activity so that After Dark won't slow down long file transfers, database sorts, or backups.\$24.

UTI 0119

Nolo Pre	ess	
BUS0133	For The Record 2.0	31.
BUS0132	WillMaker 4.0	
Peachtr		
FIN0059	At Once!	285.
Reality '	Technologies	
FIN0068	WealthBuilder (Mac)	145.
Softsyn	c/BLOC Publishing	
FIN0048	Accountant Inc. Professional	345.
Softviev	V	
FIN0090	if:X Personal Tax Analyst	59
	MacInTax 1040 - 90	
Telewar	e, Inc.	
FIN0087	M.Y.O.B. 2.0	145.

MacPro Plus

49

49

49.

49

49

(Key Tronic)

keyboard is compatible with all

Macintosh computers. The enhanced 105-key layout includes Period/Comma

lock capability, an interchangeable Caps Lock and Ctrl keys. Also, the connecting cable you need is offered at no extra

capie you he keyboard is backed by a limited lifetime warranty and unlimited toll-free product support. Includes offer for Tempo II, a keyboard macro package

**BUSINESS &** 

PRESENTATION

Computer Science & Engineering

ResumExpert Cover Letters

A Lasting Impression

Arts & Leisure

Financing & Banking

Education

Health Care

BUS0086 BUS0130

BUS0107

BUS0110

BUS0108

BUS0109

BUS0102

BUS0103

BUS0087

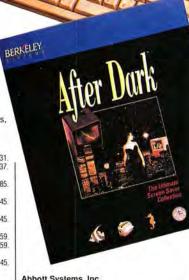
STA0010

STA0022

**Abacus Concepts** StatView II 1.03

from Affinity Microsystems a \$149.95 value FREE! INP 0156 \$145.

Key Tronic's new MacPro Plus



ADDOIL :	systems, Inc.	
BUS0131	Cheshire 1.0	63.
Acius		
DAT0045	4th Dimension 2.1	489
<b>AEC Ma</b>	nagement Systems	
BUS0129	FastTrack Schedule 1.5	139.
DAT0055	AEC Information Manager	409.
After Ho		
DAT 0076	TouchBASE	89
Aldus		
BUS0066	Persuasion 2.0	329.
ASD So	ftware, Inc.	
BUS0134	Planisoft	
BUS0146	Planisoft - 5 pack	579.
BUS0147	Planisoft - 10 pack	839.
Ashton-	Tate	
DAT0042	dBase Mac	SPECIAL! 59.
BUS0054	Full Impact 1.1	SPECIAL! 59.
Avery		
ACC0489	MacLabelPro	49.
	Index Maker	From 12-18.
	Ready Index	From 1.50-3.00
	Publishing	
BUS0149	1 Shot Worksheet	
Casady	& Greene, Inc OuickDex	
		36.
CE Soft	ware	
BUS0135		
GRA0070	CalendarMaker 3.0	31.
Claris		
DAT0064	FileMaker Pro	
BUS0058	MacProject II 2.1	
BUS0065	SmartForm Designer	289.



#### **ACCOUNTING &**

PI	ERSONAL FINANCI	3
Aatrix Se	oftware	
FIN0050	Checkwriter II 3.1	32.
FIN0041	Payroll 3.5	109.
	Ultimate Payroll	
Absolute	Solutions, Inc.	
FIN0086	Computerized Classic Accounting	225.
Checkfre	ee Corporation	
FIN0088	CheckFree	21.
ChipSof	r.	
FIN0114	TurboTax Personal 1040	50.
	er Associates	
FIN0044	ACC PAC Bedford Simply	
	Accounting 1.1	139.
Inman		
BUS0016	Business Plan Tool Kit	99.
FIN0013	Business Sense 1.3	129.
Intuit		
FIN0043	Quicken 1.5	45.
Meca		
FIN0039	Andrew Tobias' Managing	
	Your Money 4.0	135.

SmartBundle (T/Maker) Includes four outstanding

applications to make life easier, especially for new Mac owners. Each has won a MacUser Eddy Award. The word processor, WriteNow 2.2, combines ease of use with high performance (spelling checker, thesaurus, mail merge, footnotes). The merge, footnotes). spreadsheet, Full Impact 1.1, crunches your numbers and displays them in attractive charts. SuperPaint 2.0 combines drawing with a paint program, plus an AutoTrace tool. RecordHolder Plus is perfect for keeping names and addresses, invoices, and sales call records. \$215. BUS 0152



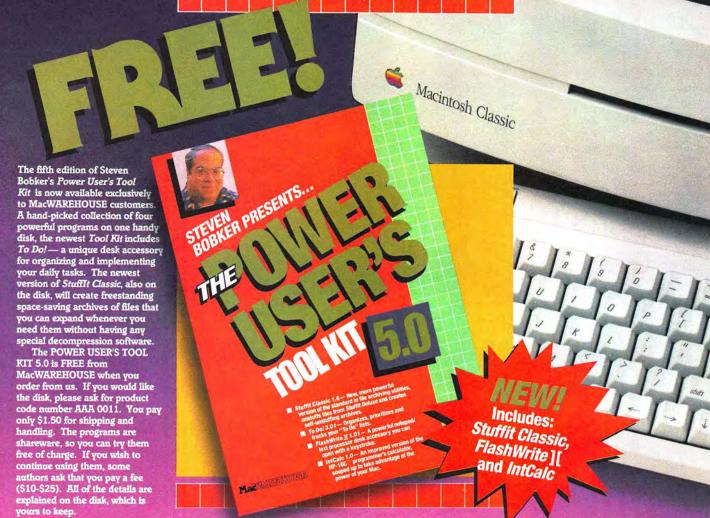
MacPlus/SE- with Extended Keyboard Carrying Case (Targus)

StatView SE+Graphics 1.03 . SuperANOVA (MacII Family)

Pamper your Mac with a Targus case made of Zilicone treated nylon to give you waterproof durability and an impact absorbing high-density foam layer with a soft protective lining for complete protection. Cushioned shoulder pad and handles provide extra comfort and convenience. There's room for everything from your Mac including the new Macintosh Classic, a hard disk drive, and the extended keyboard to pockets for your mouse,

floppies, cables, and pens. ACC0250 \$79. Full Mac line available in black Some styles available in blue, burgundy, and platinum. Premier Leather Case available (black) \$185, ACC 0482





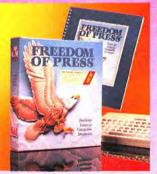


#### FREE CATALOG!

We carry more than 2000 Macintosh products, including all the latest releases and new versions. We pride ourselves on getting new products first. Just fill in the information requested below and mail the coupon. We'll start your free, one-year subscription to the MacWAREHOUSE catalog with the next issue.

Freedom of Press Light for the Mac

(Custom Applications)
Need the power of PostScript at a price
you can afford? Use top-rated Freedom of Press Light to print your PostScript language documents on over 40 nonlanguage documents on over 40 non-PostScript inkjet, dot matrix, and laser printers including HP DeskWriter, LaserJet and PaintJet. Works with PageMaker, Illustrator and Xpress. Includes 17 scalable, outline fonts and supports ATM and Adobe Type 1 fonts. \$56. UTI 0185



I'm Kerry, call me at:

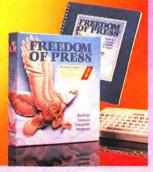
## **AWAREHOUSE**

1-800-255-6227 (1-800-ALL-MACS)

Inquires: 908-367-0440 FAX: 908-905-9279 Call 24 hours a day, seven days a week.

**NEW! Express Customer** Service Number:

1-800-445-9677 \*Midnight Express service available weekdays.



The "ULTIMATE" SE Carrying Case (I/O Design, Inc.)
The "ULTIMATE" SE Carrying Case is designed with the same high quality standards as other MacLuggage products. This case offers internal, padded compartments for ANY Macintosh keyboard, mouse, external hard disk and cables also holds the new Macintosh Classic. It also features 2 additional exterior pockets for everything from disks to umbrellas. Combine these features with sturdy Dupont Cordura nylon and 1/2 inch high density foam padding and you'll see why this is the "Illitimate" carrying the study Market of the study of the s "Ultimate" carrying case for your Mac. Available in black and navy blue. \$79.





#### Curtis MVP Mouse (Curtis)

The Curtis MVP Mouse saves desktop space and makes your job easier. You simply roll the ball with your fingertips, while the mouse stays put. The Custom Control Panel lets you choose from dozens of button commands with on-screen menus, not DIP switches. The special Custom Command function simulates any keyboard command key sequence. Offers resolution of 200 dpi. Manufacturer's one-year warranty. \$89. INP 0141

Zip

MUE<sub>1</sub>

EDEE	CATAL	AC CI	IBSCRIPTION	
FREE	LAIAI	1117 31	JESCRIPTION	

Free MacWAREHOUSE Catalog Subscription

1690 Oak Street, P.O. Box 3031, Lakewood, NJ 08701

Please enter my free, one-year subscription to the MacWAREHOUSE catalog

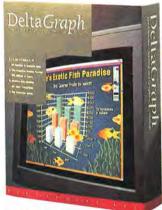
Name

Address Apt.

State

(Expect to receive your first issue within 4-6 weeks).

City



#### DeltaGraph 1.5

(DeltaPoint) Creates 25 types of charts and graphs (including seven 3D styles). Use the Data Notebook to import data (up to 10,000 points) in a spreadsheet format and DeltaGraph will create the chart you want. Embellish your graph by importing EPS or PICT files. Or use the drawing tools which include Bezier curves, fill patterns (horizontal, vertical and radial) and full color controls. Lets you print your graphs on either QuickDraw or PostScript printers, plus plotters and film recorders. The perfect solution for creating both business and scientific charts. \$129. BUS 0099

Synex		
BUS0120	MacEnvelope Plus 2.0	159.
Timeslip		
BUS0043	Timeslips III 2.0	195.
T/Maker		
BUS0152	SmartBundle	215.
Vertical	Solutions	
BUS0113	FastEnvelope	45.
BUS0105	FastLabel 2.0	45.
Wolfram	Research, Inc.	
STA0013	Mathematica (SE)	449.
Zedcor		
BUS0118	DESK 3.03	229.
	CD-ROM	
FRUCO	nn	

**EDUCORF** EDUCORP CD-ROM 5.0 EDUCORP Clip Art CD ... CDR0003 45 Int'l. Graphics Library 229 Lingua-ROM FD110198 399



#### UnMouse (Microtouch)

The UnMouse does everything a mouse can—only faster, easier, and in less space. To move the cursor, simply slide your finger over the glass surface. To make a selection merely press down. The UnMouse also serves as an extended keyboard. Tap the large red button and you have a Power Keypad with 16 keys instantly available to execute macros (60 in advanced mode). With its one million touch points the InMouse also performs as a small graphics tablet. \$189. INPO084 the UnMouse also performs as a small graphic

Wayzata	Technology	
EDU0194	The World Fact Book	79.
Microsof	t	
BUS0019	The Microsoft Office CD-ROM	599.

#### **COMMUNICATIONS &** METWORKING

	MEIWORKING	
Caravell	e Networks Corporation	
NET 0099		165
NET0100	Mac to Mac - 10 pack	229
NET0101		
CE Softv	vare	
COM0054	In/Out (5 user Pak)	128
COM0041	QuickMail 2.2 (1 - 10 users)	
CompuS	erve	
COM0008	Membership Kit	23
COM0040	Navigator 3.0	49
DataViz		
COM0001	MacLink Plus / PC 4.5	117
COM0052	MacLink Plus / Translators 4.5	98
Dayna C	ommunications, Inc.	
UTI0116	DOS Mounter	55
Farallon	™ Computing	
COM0078	Liaison 3.0	259
NET0005	PhoneNET® 128/512	35
NET0084	PhoneNET® Manager's Pack	
NET0007	PhoneNET® Plus, SE & II	
NET0040	PhoneNET® Plus, SE & II - 10 Pack	219
NET0019	PhoneNET StarController®	825
NET0059	StarController™EN (EtherNet)	1589
NET0058	Timbuktu® 2.0 - Remote Access Pack	845
NET0038	Timbuktu® 3.1	95
NET0034	Timbuktu Remote® 2.0	123

	PhoneNET® Card for EtherNet:	
NET0089	PhoneNET® Card for EtherNet: Nubus Mac II	359
NET0091	SE/30	359
NET0090	Nubus 10-pack	
FreeSoft		
COM0060	White Knight 11	85
Hayes		
COM0015	Smartcorn II 3.2	84
Insignia		
UTI0174	AccessPC	65
COM0063	Soft PC AT/EGA Module	
COM0045	SoftPC 1.3	245
	onal Business Software	
NET0097	DataClub - 3 Pack	199
NET0098	DataClub - 10 Pack	539
Microco		
NET0041	Carbon Copy Mac - single	
NET0088	Carbon Copy Mac - twin	189
Prodigy		
COM0056	Prodigy Starter Kit for the Mac	27
Sitka		
NET0056	InBox Plus 3.0	
NET0057	DOSTOPS 3.0	
NET0049	MACTOPS 3.0	187
	Ventures	
COM0043		215
	g Software	
NET0045	Lap-Link III - Connectivity Pac	99

#### PageMaker 4.0 DTP0045 DTP0047 PrePrint. 329

Design Team

All major credit cards accepted. No surcharge.
Your credit card will not be charged until your order is shipped.
If we must ship a partial order, we pay the freight on the remaining portion.
All U.S. shipments are insured at no extra charge.
C.O.D. orders accepted (add \$6.00 including shipping) — \$1,000 maximum.

Aldus

DTP0056

Cash, money order, or cashier's check.
Corporate purchase order accepted subject to credit approval.

All products are covered by a 120 day limited warranty.\*

Sales Tax: CT residents add 8%, NJ residents add 7%, Ohio residents add appropriate tax.

All orders add \$3.00 per order. We ship Airborne Express overnight unless UPS Ground delivers overnight. (Some rural areas require an extra day.)
Orders placed by 12:00 MIDNIGHT (EST) (weekdays) for "in stock" items ship same day (barring system failure, etc.) for overnight delivery.
C.O.D. orders ship via UPS (Blue Label If you are more than 2 days from us via UPS Ground). Charge is \$6 including shipping.
Alaska, Hawaii, outside continental U.S., APO/FPO call 908-367-0440 for information.

\*Defective software replaced immediately. Hardware replaced or repaired at our discretion. \*\*We regret that we

cannot be responsible for typographical errors.

Tm Kerry, call me at:
-800-255-622
(1-800-ALL-MACS) Now works in Canada.

Inquiries: 908-367-0440 Fax # 908-905-9279 (NOTE NEW N.J. AREA CODE)

Mac VIVI BEROUSE

1690 Oak Street, P.O. Box 3031, Lakewood, NJ 08701

**NEW EXPRESS CUSTOMER SERVICE NUMBER:** 1-800-445-9677





White Knight V.11

Supports the new ZModem protocol, as well as more ver-sions of XModem and Kermit. It works with MultiFinder and QuickDraw and large monitors. Get a free subscription to Genie and a free copy of Okyto with each copy of White Knight. \$85. COM 0060



M.Y.O.B. 2.0

Streamlines your accounting, and delivers essential information on the status of your business. Create a sales invoice and MYOB adds the amount to Receivables, decrements the inventory, and generates the monthly customer statement. Integrating G/L, A/P, Inventory and card files. \$145. FIN 0087



Microphone II 3.0

889

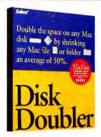
MUE1

The ideal communication software for international telecommunications. Praised for its ease of use and advanced scripting language, Now supports the hot new ZMODEM transfer protocol and can operate modems at any speed from 50-57,600 baud. \$215. COM 0043



Bridge 6.0

Play a rubber of Bridge 6.0 with the Mac's three players. Bid with either the Stayman or Black-wood conventions. Handles all the bookkeeping and tactfully informs you of any mistakes in bidding or play. It saves hands for later replaying and analysis. \$29. ENT 0303



DiskDoubler 3.1 Compresses your files when saved and expands them when opened. Shrinks any file an average of 50%. It's like getting a new hard disk at a fraction of the cost. Version 3.1 retains icons of the original document, making DiskDoubler even easier to use. Works with documents, applications and more. \$45 UTI 0179



Empower I & Empower II

Empower I is a "front line" se-curity software system that controls and monitors use of the Mac. Empower II provides resource access controls at the folder level and multi-user privileges for increased security. Each features access logging, controls for disabling floppy drives and hard disk protection.
Empower I-\$89. UTI 0166
Empower II-\$155. UTI 0146



9600 Plus Modem

The only V.32 Data Modem that gives you the ability to send and receive faxes using a 9600 Data Modem and a 9600 Send/Receive Group III Fax. Comes with MAcKNOWLEDGE communications software. \$699 MOD 0052



#### Design Your Own Home: Architecture or Interiors

Design your home from a li-brary of sample plans that calculate distances, diagonals, areas, and angles, then create the interior with a showcase of hundreds of furniture shapes arrangable in eight different views. When finished just print and begin building. \$65. ea.

Letraset		
F0N0086	LetraStudio	275
Multi Ad	Services	
DTP0042	Multi Ad Creator 2.5	695
Post Cra		
DTP0062	Effects Specialist	
DTP0063	Layouts	85
Quark, I	nc.	
	QuarkStyle	
DTP0049	XPress 3.0	519
Silicon I	Beach	
DTP0040	Personal Press	199
TimeWo	rks	
DTP0048	Publish It! Easy 2.0	145

#### DISK DRIVES & BOARDS

1000000	IN DISTALLS & DOMAD	3
Applied DRI0287	AE HD Mac Drive	245
INP0148	QuadraLink	
		213
	er Friends	can
GRA0251	ColorSnap 32 Plus	649
Cutting	Edge	
DRI0042	800K Floppy Disk Drive	149
DRI0157	20 meg Under the Mac Drive	
DRI0158	30+ meg Under the Mac Drive	
DRI0162	45 Mb Removable Hard Drive (Syquest	
DRI0159	45+ meg Under the Mac Drive	
DRI0160	60+ meg Under the Mac Drive	489
DRI0161	80+ meg Under the Mac Drive	539
Dayna C	Communications, Inc.	
DRI0174	DaynaFile dual 360K (5.25) & 1.44 (3.5	749
DRI0104	DaynaFile single 360K (5 1/4)	499
Fujitsu	say, as the daily a second to 17 17 minutes	
DRI0186	800K Disk Drive - Fujitsu	. 99
	t Technology	
DRI0218	Drive 1200	259
DRI0141	Drive 2.4	
DRI0219	Drive 360 (5.25 in. floppy disk drive)	250
DRI0140	Rapport	
	icroSystems	133
DRI0256	DataPak MO 512 MB	
DNI0230		2425
	Read-write/optical	3425

#### MaccessCard Reader (ASD)

The MacessCard Reader requires FileGuard 2.5 software. The software can be configured so that without a registered MaccessCard or the combination of a MaccessCard and an access key, no one can gain access to your Mac. Cards packaged with the reader can be used or the system can be trained to recognize any ID card (Visa, company or student ID card). ACC 0539 \$319. See line listings for FileGuard 2.5.



#### **EDUCATIONAL &**

	INSTRUCTIONAL
Beacon	Technology, Inc.
HYP0034	
HYP0035	HyperBible King James Version 2.0 129.
Broderb	
EDU0170	The Playroom
Davidso	n & Associates
EDU0037	Math Blaster 29
EDU0118	Math Blaster Mystery
	ftware, Inc.
EDU0108	Desktop Help for Excel52
HyperG	lot Software Company
	Pronunciation Tutor w/ Sound:
	Chinese, French, German or Spanish, ea. 39.
	Tense Tutor:
	French, German, Spanish or Italian ea. 39.



Hebrew, Italian, Japanese, Russian or Spanish Personal Training Systems (Full line available) Macintosh HyperCard .... FileMaker Pro 52 52. Microsoft Excel Microsoft Word 52. 52. Aldus PageMaker 4.0 .... Aldus FreeHand 2.0 ..... 52. 52. Aldus Persuasion 52 Quark XPress 3.0 52 Queue Computer SAT Prep EDU0161 Computer SA Visionary Software 29

LifeGuard ...... Synchronicity 2.5 ...

4.0, Word 4.0

## EDU0207 EDU0209 Voice & Video

BUKUU55

B0K0021

#### Scan 300/Color (Abaton)

This 24-bit color and grayscale scanner provides the image scanning power of the future without sacrificing the standards of today. It is capable of scanning color, grayscale, halftone and line art images in resolutions ranging from 72 dpi to 300 dpi. Works in both Macintosh and IBM environments with most popular graphics and OCR packages. Comes with Interface Kit and Adobe Photoshop. \$1899. INP 0157

799

359.

220

349. 599. 349.

449

499.

GRA0243	QuickImage 24 Video Frame Grabber - II	Call.
Micron	Technology	
DRI0187	Xceed 8-bit Video Card NB6-48	349.
DRI0236	Xceed Ilci - 128 Cache Card	249.
MicroTe	ech International, Inc.	
DRI0294	Athena A100 100 Meg Drive	. 899.
DRI0293	Athena A50 50 Meg Drive	.599.
DRI0311	Europa 100 Meg Drive	699.
DRI0308	Europa 20 Meg Drive	349.
DRI0309	Europa 40 Meg Drive	399.
DRI0310	Europa 80 Meg Drive	. 599.
DRI0307	MicroTech R50 50 Meg Removable	.979.
DRI0304	Nova N40 40 Meg Drive	. 565.
DRI0305	Nova N80 80 Meg Drive	.745.
Optical	Access International	
DRI0251	Access CD	.789.
DRI0252	Access MF	3995.
MED0036	Access MF Rewritable Optical Cartridge	239.
Periphe	ral Land, Inc.	

Infinity Dual 40Mb Removable ....
Infinity Turbo 40 Meg Removable

Turbo Floppy 1.4 Drive

20 Meg External Hard Drive ... 30 Meg External Hard Drive ... 44 Meg Removable .... 40 Meg External Hard Drive ... 60 Meg External Hard Drive ... 80 Meg External Hard Drive ...

80 Meg External Hard Drive

DRI0193 DRI0115

DRI0154

DRI0201 DRI0202

DRI0206

DRI0203

DRI0205

PowerUser<sup>TM</sup>

Pocket Mouse (Asher)

Pocket Mouse uses a sophisticated, accurate, patented encoder technology found in aerospace instruments. Provides a 400 DPI resolution and features a lock button

for dragging. \$49 INP 0158

Turbo Trackball

Get precise fingertip control in a space saving, ergonomic package design. Turbo Mouse offers twice the speed and accuracy in half the space. Both Pocket Mouse and Turbo Trackball come with manufacturer's lifetime warranty. \$59 INP 0051

MacBible - Greek ...... MacBible - King James Version

BOK0020 MacBible - New International Version

Getting Started Video: Excel 2.2, PageMaker

ea. 39.

gg

59

59

133	ENTERTAINMENT	
Artworx		
ENT0303	Bridge 6.0	29
Baseline	e Publishing	
ENT0351	Talking Moose	23
Broderb	ound	
ENT0259	Shufflepuck Cale	25
	Where is Carmen Sandiego?	ea. 29
	ty Software	
ENT0308	Moriarity's Revenge	35
Bullsey		
FNT0045	Ferrari Grand Prix 1.6	31



THINK C

CHITADAG	Cather Trialess Picks Circulate 8.0	ne
ENT0046 ENT0261	Fokker Triplane Flight Simulator 2.8	
	P51 Mustang 2.80	. 30.
Centron		
ENT0329	BlackJack Strategy Tester	
	(w/ BlackJack Ace)	
ENT0277	Casino Master	. 49.
ENT0289	Casino Master Deluxe Mac II Version	
ENT0257	CrapsMaster	
ENT0264	BlackJack Ace	., 27.
Electron	iic Arts	
ENT0355	Harpoon	. 39
ENT0319	Starflight	39.
Sir Tech	Software, Inc.	
EN10096	Wizardry	35
ENT0347	Wizardry II: Knight of Diamonds	. 29
Spectru	m HoloByte	
	FACES, TETRIS, Welltrisea	. 25.
	tware Toolworks	
ENT0281	Chessmaster 2100	. 32
ENT0278		. 32
ENT0269	The Hunt For Red October	. 20
Three-S	ixty	
ENT0323	Sands of Fire	32.
Toyogo		
ENT0270	Go Master 4.7	45.
ENT0326	Nemesis Deluxe	. 95
XOR Co	rporation	
ENT0274	MacGolf Classic	.52
ENT0330	MacSki	
ENT0212	NFL Challenge	
FON	TS & APPPLICATION	IS
		-

Adobe Systems, Inc.

FON0264

F0N0351

FON0326

DAC0028

FON0295

Altsys

FON0183

FON0014

F0N0284

Adobe Type Manager 2.0 Adobe Type On Call ......

Adobe Type Set 1 or 2 Adobe Type Set 3 ......

Smart Art I, II, III or IV

Adobe Type Reunion

Art Importer 2.0 . Fontographer 3.2

Metamorphosis 1.5

TypeAlign

NEW! 49.

ea. 65

ea. 65

65

38

269

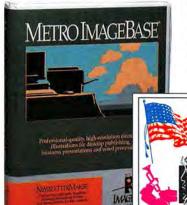
TeleTypesetting FON0343 T-Script

FON0357

GRA0191

Aldus

NewsletterMaker Vol.1



THINK C

(Symantec Corporation)
THINK C version 4.0 is the ultimate C environment. It takes programmers from idea to finished product faster than any other development environment of the Macintosh. THINK C version 4.0 is the only C development environment on the Macintosh that supports object-oriented programming, even in the source-kevek debugger. The new THINK Class Library provides the building blocks to implements a standard Macintosh user interface, so programmers can quickly leverage the advantages of object-oriented programming. \$165. LNG 0001

Broderb	und	
GRA0156	TypeStyler	119.
Dubl-Cli	ck	
FON0081	MenuFonts 3.0	31
Pacific I	Data Products	
INP0138	Pacific MacPage	
Post Cra	aft	
DTP0062	Effects Specialist	115.
QMS		
UTI0169	UltraScript	119.
Tactic S		
FON0265	ArtFonts	50.

Altsys	17	
F0N0284	Metamorphosis v. 2.0	89
Baseline	Publishing	
GRA0242	Color MacCHEESE	59
Bright S		
GRA0161	interFACE	249
Claris		
CAD0029	ClarisCAD 2.0	649
GRA0258	MacDraw II	289
GRA0117	MacPaint 2.0	92
Creative	Software	
GRA0240	Easy Color Paint 2.0	47
Deneba	Software	
GRA0075	Canvas 2.1	
GRA0187	UltraPaint	125
Dream N		
GRA0105		
GRA0124	Cliptures Vol 2 Business Images	69
GRA0219		69
GRA0101	MacGallery (Hypercard version)	
GRA0102	MacGallery (MacPaint version)	27
Electron		
GRA0106	Studio/8	
GRA0231	Studio/32	449
Farallon		
GRA0221	MediaTracks <sup>TM</sup>	189
GRA0222	MediaTracks™Multimedia Pack	319
Graphso	oft	
CAD0024	Blueprint	219
CAD0030	MiniCAD+ 3.0	595
Innovati	ve Data Design MacDraft 2.0	
CAD0028	MacDraft 2.0	193
GRA0104	Dreams 1.1	429

WordPerfect 2.0 for the Macintosh (WordPerfect) Taking full advantage of the Macintosh interface. WordPerfect 2.0 is easy

compatible with industry standards. Features



#### include improved graphics handing, drawing and editing capabilities, styles, newspaper and parallel columns, macros and macro editor, borders, sort, merge, 115,000-word speller/thesaurus, search and replace and table of authorities. Other features include a Ruler with pop-up

conversion utility that lets you transfer documents. \$299. WRD 0041

#### T-Script Basic **GRAPHICS & MULTIMEDIA**

#### 3G Graphics

GRA0188	Images with Impact! Accents & Borders 1 6	ō
GRA0111	Images with Impact! Business 1 6	5
GRA0089	Images with Impact! Graphics	0
Abracad	ata	
CAD0032	Design Your Own Home-Architecture 6	5
CAD0033	Design Your Own Home-Interiors 6	5
Adobe S	systems, Inc.	
DTP0054	Illustrator 3.0 (w/ ATM 2.0)	9
GRA0125	Streamline 2.0	ġ

Streamline 2.0 PhotoShop

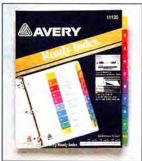
> Electronic Clip Art (Metro ImageBase)

Communicate more effectively with fabulous art and graphics from the world's largest publisher of clip art. Each of the 18 ImageBase packages contains at least 100 topic-related images drawn by professional artists. (digitized at artists. (digitized 300dpi or in EPS format). \$85. ea

Index Maker (Avery)
Create professional-quality customized index dividers with your Laser Printer. Enables the individual to create indexes with tab titles and graphics. Includes 5 sets of blank-tab indexes and 3 sheets of clear laser printer lables. From \$12-\$18.

55

Ready Index
Produce efficient indexes for better organization on heavy-duty, clearreinforced pages with colored and numbered tabs corresponding to a colored and numbered table of contents. Just type or write on the master and use a copier machine to duplicate additionals. From \$1.50-3.00.





MacBible - New International Version

Revolutionize the way you study the Scriptures. Ideal for students, pastors, and scholars. Characteristics include a flexible word-and-phrase search mode, a verse mode for displaying any range of verses, and a count mode for showing statistical information about words. \$59. BOK 0020



DoveFax Desktop

Turn your Mac into a multi-featured personal fax equipped to send and receive letters and documents anywhere in the world. DoveFax works quietly behind the scenes, automatically answers and receives faxes without interruption and redials until your fax has been sent. Combines a 9600 baud fax modem and 2400 baud data modem. \$299. MOD 0038



Metamorphosis

Professional v. 2.0
The ultimate font conversion utility. Feature enhancements include conversion to PICT outlines, automatically hinted Truetype (Mac and PC), and PC PostScript Type 1. Also, generation of EPS and conversion of Type 3 to hinted Type 1 for use with ATM. \$89. FON 0284







#### MacPrint 1.2

Easy-to-use software utility that lets you use most Mac appli-cations with any HP LaserJet, DeskJet or compatible printer including the Series III. Prints text and graphics at the printer's maximum resolution, but does not support Postscript. is included. \$95. UTI 0098



#### Layouts

Over 200 templates to design Newsletters, Brochures, Catalogs, Flyers, Business Statio-nery, and Business Reply Cards. Each one ready to use without worrying about measurements, crop marks, or registration marks. Publish magazine says "Exceptional, high recom-mended..." MacUserrated four and a half mice! \$85. DTP 0063

GRA0238

GRA0131

HYP0027

GRA0112

DAC0002 Strata GRA0176

GRA0109 GRA0249

T/Maker

GRA0209

GRA0039

GRA0088

GRA0199

Caere

INP0143

CoStar

Solutions, Inc.

Studiotronics GRA0189 Colorset 1.5 SuperMac

Master Paint

Super 3D 2.1

SuperCard 1.5

SuperPaint 2.0

StrataVision 3D

Strategic Mapping, Inc. GRA0227 Atlas MapMaker 4.5

SmartScrap & The Clipper 2.01.

PixelPaint 2.0 ...... PixelPaint Professional 2.0 .....

ClickArt Business Cartoon ...

HARDWARE &

**PERIPHERALS** 

ClickArt Business Image ... ClickArt EPS Illustrations

DeskPaint 3.3

LabelWriter

Silicon Beach GRA0092 Digital Darkroom 2.0



#### Multi-Ad Search

Multi-Ad Search is a graphic utility program that allows multiusers to create, catalog, manage and manipulate Macintoshbased graphics for placement into desktop publishing pro-grams. \$129. UTI 0199





(Haves)

Hayes combines the V-series ULTRA Smartmodem 9600, modem cable, transformer, telephone cable, Smartcom II and Hayes Connect software giving you the finest in high-speed, automated communications, with modern sharing capabilities over AppleTalk networks. Included is a V-series cable to allow you to go from carton to communication quickly. \$929. MOD 0059

Hewlett	
INP0096	HP DeskWriter - 2279A759
MegaGra	aphics
	8-bit 19" Hi-Res Greyscale for Mac II 1895
MON0016	8-bit 19" Hi-Res Greyscale for SE/030 , 1899
MON0006	Rival System for Mac II
MON0008	Rival System for Mac SE1199
MON0007	Rival System for Mac SE/30 1199
Seikosh	a
INP0041	Seikosha SP 2000 AP Printer
Sharp	
COMP007	Wizard OZ 7000 (32KRam) 229
COMP018	Wizard OZ 7200 (64KRam)
Thunder	Ware
INP0116	LightningScan 400385
INP0007	ThunderScan Plus
1	INPUT & OUTPUT
Abaton	

Abaton		
INP0157	Scan 300/Color	1899
INP0130	LaserScript Printer	1999



339

135

56

375

369

229

465

33

32 82

115

479

185

#### MacDraw II 1.1

(Claris)
Create a variety of graphics in addition to regular drawings. Use it for simple Desktop Publishing projects (fliers. invitations, business forms). Make desktop presentations. Create illustrations, logos, and maps. Or design floor plans, landscapes, and products.

MacDraw II prints everything from E size documents to color 35mm slides. and generates fourcolor separations. Comes with FREE MacPaint 2.0 and custom clip art. FREE upgrade to MacDraw PRO. A \$349 value. GRA

	ngineering	
INP0051	QuadLynx Trackball ADB(SE/II)	
INP0158	Pocket Mouse	49
Calcomp		
INP0102	The Wiz Pen	
INP0098		159
CH Prod		
INP0121	RollerMouse ADB	75
Curtis		
INP0141	MVP Mouse	89
<b>Datades</b>	k International	
INP0097	DataDesk Switchboard	
INP0047	Mac 101 Keyboard SE/II	129
Digital V	rision, Inc.	
GRA0145	Computer Eyes B & W	199
GRA0154	Computer Eyes For Mac-Color	349
ICD		
INP0095	Graflex	82
Kensing	ton	
NP0059	Turbo Mouse	109
INP0060	Turbo Mouse ADB (SE or II)	109
<b>Key Tro</b>	nic	
INP0156	MacPro Plus	145
Koala		
INP0127	MacVision 3.0	269
Kraft		
INP0094	Kraft ADB Trackball	
Kurta		
INP0113	IS/ADB Tablet 8 1/2 x 11	319
INP0114	IS/ADB Tablet 12 x 12	385
INP0115	IS/ADB Tablet 12 x 17	625



#### TouchBASE (After Hours)

TourchBASE a database to manage personal contacts It combines power, functionality and speed with the handiness of a desk accessory. Prints labels, envelopes, fax covers, address books, and reports. Provides multi-user access over a network. Furnishes powerful searching, sorting, marking and much more. Easily imports data from other products such as FileMaker, HyperCard, Microsoft Works, and Excel. \$89. DAT 0076

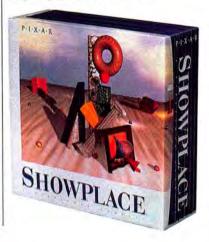
Microsp	eed	
NP0126	MacTRAC ADB	75.
INP0140	MacTRAC DB9	62.
MicroTo		
INP0084	The UnMouse	189.
Mouse S	Systems	
INP0132	Little Mouse ADB	75.
INP0134	Trackball / ADB	69.
Sophisti	icated Circuits	
ACC0535	Power Key	65.

#### MEMORY UPGRADES & **ACCELERATORS**

1	MEG SIN	Ms Low profile,	100ns,	High	Quality	59
D	aystar	Digital				
Di	RI0224	FastCache Ilci		**		289
Di	RI0288	PowerCache -	40 MHz	(Ilci)		979

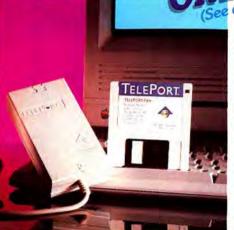
Showplace (Pixar)

Showplace is a 3D sketchpad for making a few mouse strokes you call up ClipObjects (or create your own), arrange them into scenes, give them rich material appearances (Looks), light them, then "render" them into a great image. Your own graphics can also be wrapped onto any object for effects impossible in 2D. Works with (but does not require)
MacRenderMan for print-quality
computer graphics. GRA 0267 \$529



## 0

OVERNIGHT DELIVERY



#### TelePort, the ADB Modem (Global Village Communication)

The perfect choice for powerful yet compact Mac communication. This 2400 baud modern with MNP5 data compression packs Hayes compatibility and error-free communication. TelePort plugs into your mouse (ADB) port and provides a pass-through connector for other devices. It uses no external power supply, and leaves your serial port free for other uses! MOD0049 \$145.

TelePortFAX includes SendFAX software. Hold OPTION as you drag FILE-PRINT to easily send FAXes worldwide MOD0058

Þ	16	9.	

Best Dat	a Products	
	SmartOne 2400/1200	139.
Dove		
MOD0038	DoveFax Desktop	299.
Global V	illage	
MOD0049	TelePort	145.
MOD0058	TelePort/Fax 9600	189.
Hayes		
COM0023	Smartmodem 2400	349.
MOD0017	Smartmodem 9600 (V series)	699.



MOD0059	Ultra 96 w/ Smartcom II	929.
Microco	m	
MOD0050	MacModem V.32 / 9600	689.
PowerU:	ser™	
MOD0043	PowerUser 2400	99.
	PowerUser Mini Send Fax 2400/9600 .	
	PowerUser Send/Receive Fax Modem	
	2400/9600	279
Prometh	eus	
MOD0046	24/96 MSR	309
	9600M Plus Modem	
	Promodem 2400 MFax	
MOD0035	TravelModem	199
Shiva		
NET0067	NetModem V.32 (9600)	1169.
	orporation	
MOD0020	SupraModem 2400	119.
MOD0020	SupraModem 2400	119.

#### MUSIC & SOUND

MOSIC & SOUND	
Altech Systems	
MUS0032 ALTECH MIDI Interface	59
Coda Music Software	
MUS0044 Finale 2.5	549
Electronic Arts	
MUS0004 Deluxe Music Construction 2.5	85.
Farallon™ Computing	
MUS0036 MacRecorder® 2.0	159
Opcode Systems	
MUS0083 MIDI Translator	43
Tactic Software	
Sound Clips Vol. 1, 2, 3 & 4	ea. 50

#### SECURITY & VIRUS PROTECTION

ASD Sof	ftware, Inc.	
UTI0135	FileGuard 2.5	. 139.
UTI0130	FileGuard 2.5 - Office Pack 5	.349.
UTI0131	FileGuard 2.5 - Office Pack 10	.579.
ACC0539	MaccessCard Reader	.319.
Fifth Ge	neration System	
	DiskLock	.118.

## Microsoft Excel 2.2 (Microsoft) Now use the full memory of your Mac—up to 8 Megabytes. Excel 2.2 recalculates 40% faster

back guarantee, if you are not completely satisfied Ask for details when you place your order.

Microsoft Excel

while empty cells consume no memory at all. Cell annotation lets you add notes to any cell and auditing functions help you trace cell references. The new Search and Replace function makes global changes. Just doubleclick anywhere on a chart to see the dialog box for all the chartformatting commands. Charts are now dynamically linked to the original worksheet, so the chart automatically reflects any changes in the spreadsheet. Also supports "warm links" to Word 4.0, so changes to your spreadsheet data automatically appear in

your Word documents. \$245. BUS 0003

#### SmartOne 2400/1200 (Best Data Products)

When you need a 2400 baud modern, the SmartOne 2400/1200 provides an economical alternative. For less than the cost of some 1200 bps units, you get a

Hayes compatible modern with auto answer/originate, 300, 1200, and 2400 baud operation, pass-through phone jack, speaker with programmable volume, and a manufacturer's two-year warranty. All user options are stored in non-volatile memory. Includes free Quicklink II communications software, modern, cable, and

CompuServe/Prodigy Start-Up Kit offer. \$139. MOD 0021

#### 

Aladdin Systems UTI0145 Stufflt Deluxe 63. ALSoft UTI0132 DiskExpress II 2.04 w/MultiDisk ... 57 UTI0133 Power Chute ... Baseline Publishing INIT Manager Berkeley System Design UTI0119 Alter Dark 2.0 ....... CE Software UTI0188 Quickeys 2 v.2 ... 99. UTI0188 Quickeys 2 Connectix UTI0148 HandOff II 57 **Custom Applications** Freedom of Press 3.0 ..... Freedom of Press Light 3.0 ..... UTI0136 UTI0185 255 Dantz Development Retrospect 148 Digitalk, Inc. LNG0036 Smalltalk/V MAC .... 125 **Dubl-Click** ClickChange 41 Fifth Generation Systems UTI0063 FastBack II 2.5 125 HTI0087 SuitCase II 1.2 SuperLaserSpool 2.02-Single User 93 ICOM Simulations, Inc. UTI0084 On Cue 35 Insight Developement 95 UT10098 MacPrint 1.2 Magic Software

Buy Microsoft Excel 2.2 NOW and you can

**UPGRADE** to

Microsoft Excel 3.0

for just \$50.

direct from Microsoft , when available.

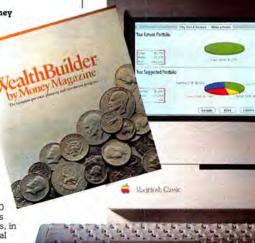
**UTILITIES &** 

PROGRAMMING

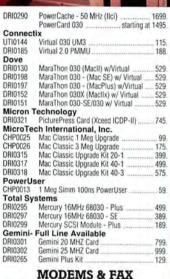
Abbott Systems, Inc. UTI0113 CanOpener .....



funds. \$145. FIN 0068



Autosave II



#### iton

Abaton			
MOD0019	InterFax 12/48		5
MOD0034	InterFax 24/90	349	ğ
Applied	Engineering	-	
MOD0054		209	ġ

#### Effects Specialist (Postcraft)

Transforms any font in your system into sparkling headlines or logos. Just type in a word or two and click the mouse to create instant typographical art! Features include WYSIWYG, color, kerning, a complete background generator and more! 120 effects range from subtly elegant to ultra flamboyant. Imports and exports as PICT or EPSF. Use with your favorite desktop publishing, graphics, or multimedia software. Prints to virtually any printer! \$115 DTP 0062



#### CompuServe

the Electronic Mall on Compuserve. The MacWAREHOUSE GO code is GO MW. As always, you'll get has, dependable overnight service and you can leave messages for Kerry or any of our support staff.

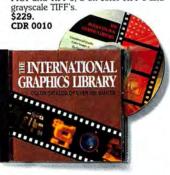
CompuServe Membership Kit (CompuServe)

The largest on-line data service. with over 500,000 users. Services include electronic mail, bulletin boards, special interest groups (Forums), and a discount department store You can read the complete text from major newspapers and encyclopedias, plus stock data, weather forecasts and book and movie reviews. Mac users have three special interest Forums: entertainment (MACFUN), personal productivity (MACPRO) and business (MACBIZ). and business (whice it) CompuServe's Mac bulletin boards provide a lively forum for exchanging ideas. The for exchanging ideas. The Membership Kit contains everything you need to get started, including credit against your first two hours on-line. \$23. COM 0008



International Graphics Library (Educorp)

Put professional visual impact into all of your page layouts, presentations, and multimedia productions with the International Graphics Library CD-ROM. Features over 200 business-oriented images, flags and currencies of the world, globes, maps of countries and states and patriotic and political themes all created in high-resolution 24-bit color PICT and TIFF's, 8-bit color TIFF's and



Magna		
UTIO166	Empower I	89
UTI0146	Empower II	
Mainsta		
UT10073	Capture 3.0	45
UT10004	MacFlow 3.1	125
Microco		
UTI0191	Microcom 911 Utilities	89.
Microso	ft	
LNG0030	QuickBASIC	64
	Services	
UTI0199	Multi Ad Search	129.
Now So	Humana	
UTI0167	Now Utilities 2.0	79.
UTI0168	Screen Locker	45.
ON Tech	nology	
UTI0142	ON Location	75.
Preferre	d Dublichere	
UTI0190	Personality	53.
UTI0183	ScreenShot	31.
Salient		
UTI0179	DiskDoubler 3.1	45.
Shana C	Corporation	
LNG0037	Inside Out	369.
SNA		
UTI0207	Offline	51.
Symante	ec Corporation	
UTI0151	Norton Utilities for the Mac	89.
UTI0078	Symantec Utilities for Mac II (SUM)	99.
LNG0001	THINK's C 4.0	
LNG0002	THINK's Pascal 3.0	165.
Zedcor		
LNG0031	ZBasic 5.0	99

#### WORDPROCESSORS & SPELLING CHECKERS

Ashton-Tate
WRD0009 FullWrite Professional 1.1 ...... SPECIAL! 59.

Baseline SPL0029	Thunder 7	50
Caere	munder /	
UTI0164	OmniDraft	60
UTI0100	OmniPage 2.1	
UTI0163	OmniSpell	
Claris	Onnispen	03.
	MacWrite II	142
DeltaDel		
MBD0033	Taste	85
Deneha	Software	
SPI 0015	Spelling Coach Pro. 3.1	124
Lexperti	Se	
SPI 0003	MacProof 3.2.1	115
LifeTree	Software	
SPI 0028	Correct Grammar	59
Microsof		
WRD0022	Word 4.0	245
DiahtCo	4	
WRD0031	RightWriter	55
Sensible	Software	
WRD0023	BookEnds 1.2	51
	Sensible Grammar	
CNA Inc		
WRD0033	Stylist	51
WRD0030	Magic Typist	50
T/Maker	Co.	
WRD0018	WriteNow 2.2	119
WordPer	rfect	
WRD0041	WordPerfect 2.0	299

FileGuard 2.5 (ASD)

Protect your Hard drives and Partitions from unauthorized access (including security bypass with a system diskette), copying and erasure: Applications and Files/Folders (including system folder) from unauthorized access, deletion, and/ or illegal copying: Desktop (including system folder) from alterations by unauthorized users; Keep an eye on System Usage with the system users log which continuously tracks user/group activity. Single UTI 0135 \$139.

Office 5 Pack UTI 0130 \$349.



## Cutting Edge Hard Disk Drives (Cutting Edge) New enhanced Cutting Edge drives quieter fan, dual-fuse surge buffer and simplified operation manuals. Available in 20 MB to 80 MB. 20MB Only \$329, 30+MB Only \$389, 45+MB Only \$449, 60+MB Only \$489, 80+MB Only \$539. deliver quiet, reliable memory with access times as low as 20ns. New features include two power outlet, 50-pin cables for easier daisy chaining, a **45MB Removable**The enhanced 45MB Removable is based on the same award winning SyQuest mechanism that other leading makers offer at twice the price. Exchangeable cartridges provide unlimited storage. 45 MB Removable \$669 Full-Featured

2400 BPS Mini Modem

Install a new Power User 2400 baud modem and log on to any of the exciting on-line services! This fully Hayes compatible modem comes with everything you need to start communicating. It's easy to install and ready to use. Comes with MAcKNOWLEDGE communication software and the latest Maxfax software. Cable is included. MOD 0043 Only \$99.

24/96 Mini Send/Receive Fax

Includes all the features of the PowerUser 2400 BPS Mini Modem plus a powerful 9600bps send/receive fax to meet all your communication needs. Preview your fax on the screen, print it, delete it or forward it to another fax machine. Includes greyscaling to any Group III fax. All PowerUser modems come with a one year warranty. MOD 0062 Just \$199.

Maxfax

I'm Donna, call me a

POWER USER



# How to Master 20 Popular Macintosh Programs Without Ever Reading The Manuals

Macintosh Programs Can Be Learned in a Few Hours With the Right Training

Over the past four years I've been associated with over 50,000 people attempting to learn the Macintosh computer. I've watched as each person wages their own personal, private battle to master the computer and the most popular Macintosh programs.

I've seen their frustration, have empathized with their confusion, and understood their computer fears. I've talked to workers who have had new computers and new programs simply dropped on their desk with the directive to, "learn this." I've listened to people who have struggled night after night trying to read and understand a computer manual. Can you imagine trying to understand and master 4th Dimension from the manual?

You would be surprised at the number of people who have confided with me the fact that they've literally given up ever learning some of the programs. They simply put the box on the shelf and wrote the expenditure off as a bad investment.

#### Hard Earned Money Wasted

Can you imagine how much money has been wasted on programs and computers that are sitting abandoned? Right now think of the people working on Macs in your office. Do they really understand the machine? Do they know what to do when it goes down? How many programs are each of your people using? Have they really mastered the programs they're using? Do they know the short-cuts and valuable techniques that will save you time, money, and increase your professionalism?

#### An Excellent, Low Cost Training Answer

Four years ago I founded MacAcademy. My purpose was to create a training organization that provided training similar in nature to the Macintosh itself - simple, easy to use, and effective.

Now, four years later the concept has proven to be a great success. Right now people are benefiting from MacAcademy training in over 100 cities in the U.S., in Canada, Great Britain, Australia, Japan, Hong Kong, and 22 additional countries throughout the world.

MacAcademy training is successful for one reason - it works!



#### The Video Answer

Two years ago we introduced the MacA-cademy Video Training Library. This library now includes over 45 different titles. Each video is 2 hours long and offers clear, concise, effective training for the Macintosh and over 20 popular programs. In many cases you can purchase up to 6 hours of training for one program.

MacAcademy has resisted the temptation to follow competitive training programs who have recently implemented large price increases. Our videos started out at \$49 each and are still only \$49. The best training in the business for less than \$50. This low cost training alternative has proven to be the Macintosh training choice of over 10,000 companies.

#### **Guaranteed Results**

The MacAcademy reputation is excellent. Our guarantee is simple: If you're not happy we'll give your money back. No hassles or problems.

#### To Order

Here is a current list of MacAcademy Video training tapes now available. To order, simply send check, credit card information, or purchase order to MacAcademy Videos Dept. MU591 477 S. Nova Rd. Ormond Beach, FL 32174 or call the numbers listed below. Now is the time to start training. Thank you for allowing MacAcademy to help you in that effort.

To Order: Call Toll Free 1-800-527-1914

FAX Orders Call 1-904-677-6717 48 Hr. Delivery

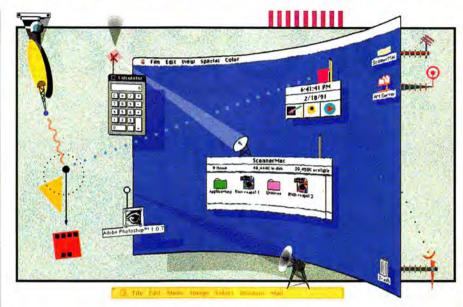
	The Macintosh Part #1		
	The Macintosh Part #2		
	The Macintosh Part #3		
	Adobe Illustrator 3 Part #1		
	Adobe Illustrator 3 Part #2		
	Adobe Illustrator 3 Part #3		
	QuarkXPress 3 Part #1		
	QuarkXPress 3 Part #2	1	
ı	OuarkXPress 3 Part #3		
	FileMaker Pro Part #1		
	FileMaker Pro Part #2		
	FileMaker Pro Part #3		
	HyperCard Basics		
	Intro. To HyperTalk Part #1		
	Intro. To HyperTalk Part #2		
	Persuasion Part #1		
	Persuasion Part #2		
	SuperPaint Part #1		
	SuperPaint Part #2		
	Excel 2.2 Part #1		
	Excel 2.2 Part #1		
	Excel 2.2 Part #3		ĺ
	PageMaker 4.0 Part #1		ĺ
			ĺ
	PageMaker 4.0 Part #2		ĺ
	PageMaker 4.0 Part #3		l
	Freehand Part #1		I
	Freehand Part #2		
	Word 4.0 Part #1	_	i
	Word 4.0 Part #2		I
	Works Integration #1	$\vdash$	ı
	Works Word Processing #2	$\vdash$	l
	Works Database #3	=	I
	Works Spreadsheet #4	=	l
	Canvas Part #1		l
	Canvas Part #2	$\vdash$	
	MacWrite II Part #1	$\vdash$	
	MacWrite II Part #2		
	Macintosh Networks	$\vdash$	
	Utilities, CDEV's, Inits	$\vdash$	
	Quicken		
	Dollars And Sense		
	Design & Layout Techniques		1
-	©1991 Florida Marketing International, Inc	c	

Please circle 80 on reader service card.

## **Applications Are Talking Too**

Interapplication communication is on its way — and when it gets here, it'll change not only what applications do but also how you use them.

**By Michael Swaine** 



hen System 7.0 arrives this summer—oops, no room for another foot in my mouth. Let's start again.

Whenever System 7.0 arrives, its most important feature — interapplication communication — won't be visible immediately. IAC (interapplication communication) lets applications talk among themselves, and it's a juggernaut rolling toward your desktop. You won't be able to avoid it forever, because eventually your applications are going to be chattering among themselves like squirrels in the trees. The question is, when? IAC won't mean much to most users until a critical number of applications that make use of it have come on the scene.

There has been plenty of time for developers to create applications that exploit IAC, so some of them will arrive at the same time as the System 7.0 release or shortly thereafter. That doesn't mean that Mac users will immediately have them—unless we run right out and plunk plastic on computer-store counters or the applications we're currently using are among the first to upgrade. But it should mean that IAC will already have some momentum when it starts rolling our way.

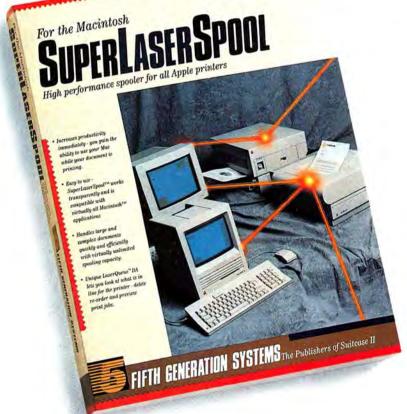
In recent months, however, things have become a little more complicated for the developers who are going to create these applications: There are now more flavors of IAC to choose from as well as competing claims to weigh. Fortunately for Mac users, these are problems that application developers have to deal with — the rest of us don't have to worry about which IAC method is best. But the fact that we don't have to make the choices doesn't mean we won't have to deal with the consequences. The choices developers are making will matter to us because different IAC approaches are not all compatible, and incompatible communications methods generally mean no communication at all. So maybe it wouldn't hurt if we knew a little more about IAC.

Exactly what, the pragmatic Mac user is justified in asking, is interapplication communication going to do for me? Speaking as an occasionally pragmatic Mac columnist, I see IAC as a prerequisite for two developments we can expect to see in computer software over the next few years: collaborative computing and more-focused applications. Both developments address real and growing problems of managing the increasingly complex tasks that can be done by computers and dealing with the proliferating tools we use in performing these tasks.

#### The Power to Point

Collaborative computing means people working together, via computers, to achieve a common goal. It's nothing new, really, but what is relatively new are some of the ideas for making collaboration easier. For example, we need a more robust way to share information than what we currently have. What we have is the Clipboard, which allows us to pass around copies of information chunks. What we need is to be able to share the actual chunk, not copies

# Wait loss program.



When you're waiting to print, you and your Mac can put in some heavy downtime. Especially if you share a printer. But here's a wait loss program that really works.

SuperLaserSpool<sup>™</sup> gives you your Mac back in seconds and handles all the printing in the background.

Along with processing documents, sending them to the printer and downloading fonts, SuperLaserSpool gives you extra control with the exclusive LaserQueue<sup>™</sup> desk accessory. You can preview documents. Change the order they print in. Reroute them to other printers. Or delete them altogether. It even tells you when documents are finished printing.

SuperLaserSpool works with virtually all
Macintosh applications and stand-alone or networked
ImageWriter,™ LaserWriter,™ HP DeskWriter™
and PostScript-compatible printers using standard Apple
drivers. All you do is load it and forget it.

Order SuperLaserSpool now, and—for a limited time—get a free copy of File Director,<sup>™</sup> the ultimate file management program valued at \$129. Just call the toll-free number below. And prepare to lose some wait.

#### 1-800-873-4384 EXT. 145

Fifth Generation Systems, Inc. 10049 N. Reiger Road Baton Rouge LA 70809 Technical Support: (504) 291-7283

#### POWER TOOLS

#### **BEATING THE SYSTEM**

A decade of experience with 'integrated' applications should convince anyone familiar with software that a jack of all trades rarely masters any.

of it. This is crucial, because not all "copies" are identical — one copy may have been edited, for example — so when collaborators talk about a chunk of information, they may not be talking about the same chunk. Collaboration is always performed *on* something, and the collaborators need to be able to point to that thing itself.

System 7.0 satisfies this collaborativecomputing prerequisite by allowing documents to incorporate links to shared chunks of information. There are different ways to implement such links, but Apple's model is Publish and Subscribe. In the Publish and Subscribe model, a chunk of information in one document can be marked as a "publication" and many documents can "subscribe" to it. The publication can be incorporated smoothly into each subscribing document as though it had been generated there, and when the publication is changed, it changes in each subscribing document. These changes occur because the subscriber has a link to the original, not the original itself.

#### **Death of the Creeping Feature**

The second important benefit that IAC will provide is a trend toward more-focused applications. This comes down to the issue of the specialist versus the generalist. Every Mac application is — or ought to be an expert in some domain. A decade of experience with "integrated" applications should convince anyone who's familiar with personal-computer software that a jack of all trades rarely masters any. But most Mac applications don't stick to their individual areas of expertise. Communications packages have full-featured editors, spreadsheet programs draw graphs, and word processors evaluate numeric expressions. Why is this creeping-feature syndrome happening? Because we, as users, demand it. We need to access our address books while we're using communications programs, insert the results of computations into letters, see data in a different way - and these real-world

problems often slop over the nice boundaries of an application's area of expertise.

Integration of software functionality is the problem, but creeping features aren't the solution. For most people, integrated software isn't the solution either. This is because, again, the tool we now have is the Clipboard, and again, it's not what we need. The Clipboard lets you move data to the application where the desired function resides. But often what you *really* want to do is move the function to where the data is. You want to stay where you are and have number crunching or graphing come to you. You want to work "in place."

With AppleEvents and low-level IAC, two of System 7.0's IAC capabilities, you can do that. (Or you will be able to do that when applications that use these system capabilities are released.) One application can draw on the expertise of another, so that each focuses on its area of expertise, calling on other applications for capabilities outside its specialty. You can adopt a surgical approach, requesting just the precise instrument you need to operate on the patient in front of you, rather than making do with hairpins for clamps or continually wheeling the patient from operating room to operating room.

#### **Apple's IAC Instruments**

Publish and Subscribe, AppleEvents, and low-level IAC are System 7.0's IAC tools. Publish and Subscribe is intended to be nearly as ubiquitous as Copy and Paste. It's universal IAC. AppleEvents is the protocol that manages how applications send messages to each other. It's intended to be the generic IAC for the Macintosh, and any applications that want to get in on the conversations are supposed to talk AppleEvents.

Low-level IAC is a set of tools for developing more-specialized IAC abilities. Unlike AppleEvents, its protocols are not standardized by Apple, so its most obvious use is to give a third-party company's product line an edge by making its applications communicate better among themselves than they do with other vendors' applications. This is called proprietary IAC.

None of these IAC capabilities are here on a grand scale yet, because System 7.0 is not here yet. The delays have lessened the potential impact of this significant upgrade of the Mac's operating system. The notions that everyone will shortly be using System 7.0 and that the problems presented by the 2-megabyte minimum-memory requirement for System 7.0 would somehow





Keyboard Shelf and SideClip with Macintosh SE/30.

Keyboard Slideaway with Macintosh IIci.

## SPACE THAT WORKS

You're tripping over your keyboard. Your CPU needs its own desk. Your monitor is too low. That report you're working on has vanished. Paper is everywhere.

But don't give up.

What you need is some help from Kensington.
Increase valuable desk space with our new
Keyboard Shelf for the compact Mac, or with
Keyboard Slideaway® for the Mac II.

Both do more than just get your keyboard out of the way.

Keyboard Shelf's recessed storage compartent is ideal for holding pens, disks and other desk items. And Keyboard Slideaway extends a narrow desktop into a wider workspace.



Another way to increase your workspace is our sturdy Mac II stand. The perfect addition for anyone who wants to get their CPU off their desk and onto the floor.

For the compact Mac, there's Maccessories® Tilt/Swivel. With it, you can rotate your Mac up

to 100° and tilt up to 16° for just the right viewing position. And unlike other tilt/swivels, we've combined heavy duty plastic and



high density polyethylene for an ultrasmooth movement.

What's more, Kensington's products fit right in with the design of your Mac. The styling is complementary. The colors identical. Even the same materials are used.

Kensington.

Because you can't work efficiently if your space doesn't work.

For a free brochure and the dealer nearest you, call 800-535-4242. Outside the U.S., call 415-572-2700.

KENSINGTON.

#### **POWER TOOLS**

#### **BEATING THE SYSTEM**

The big news from
January's Macworld
Expo was Excel 3.0, and
the big news about Excel
3.0 was OLE (object
linking and embedding) —
part of Microsoft's
approach to IAC.

magically go away have proved to be wishful thinking. When System 7.0 arrives, System 6.x will not immediately sidle off the stage.

While System 7.0 has been slouching birthward, two higher-level approaches to IAC on the Mac have sprung up.

#### Strange Embedfellows

The big news from Microsoft at January's Macworld Expo was Excel 3.0, and the big news about Excel 3.0 was OLE (object linking and embedding). OLE is part of Microsoft's approach to IAC, developed for PCs running Windows and now ported to the Mac.

Microsoft has implemented its IAC identically on the PC and the Mac so that IAC links among documents work across platforms. You can, in principle, link an Excel spreadsheet and a Word document on the Mac and move the documents to a PC, and not only will Excel and Word on the PC be able to read the documents but the link will work too.

Isay in principle because at the moment only Excel supports OLE. However, other Microsoft applications on the Mac and PC will use OLE. Not only that, so will applications from other developers, because Microsoft is making its protocols public.

Microsoft's IAC is not Apple's IAC—but it is also not a proprietary IAC. Microsoft has implemented document linking in a way that differs from Apple's Publish and Subscribe approach not only technically but also at a level that will affect users. Developers have the option of using either the Microsoft or the Apple version of IAC. The Microsoft option has some attractions, particularly if you have Mac and Windows versions of a given application. It does muddy the waters, however, and the programmer interface won't be available until later this year.

There is, however, another high-level approach to IAC on the Macintosh that is

currently available, is AppleEvents-compatible, and promises a Windows version in the not-too-distant future.

#### IAC Here and Now

The IAC Toolkit from Palo Alto-based UserLand (well-known Mac developer Dave Winer's latest venture) widens the field of choices, and Winer has beaten Apple and Microsoft to the punch. Although IAC Toolkit is currently a Maconly product, the head developer, a Windows-programming veteran, has been charged with porting it to Windows.

The UserLand IAC Toolkit works with System 7.0 or the current System 6.x. To use it with System 6.x, all you have to do is put an INIT into the System Folder. The IAC Toolkit is a collection of routines programmers can add to their applications. These routines let applications send messages and respond to messages from other applications. Because it offers a higher-level approach than working directly with Apple's tools, it should speed development of applications that will exploit IAC.

One of the unanswered questions about IAC is just what it will look like to users. The UserLand product doesn't really answer that question, but it gives us a few hints. In principle, the user interface for all of IAC (except for Publish and Subscribe) is up to third-party developers. In practice, Apple will no doubt provide examples in the form of applications from its software subsidiary, Claris.

Eventually there will probably be a user scripting language that lets you control applications precisely. What that language may look like is unsettled; it may have HyperTalk-ish syntax, or it may look more like batch-command files in DOS. There will probably be more than one such language. UserLand is working on one, which it hopes to bring to market this year. The IAC Toolkit has been designed throughout with scripting in mind.

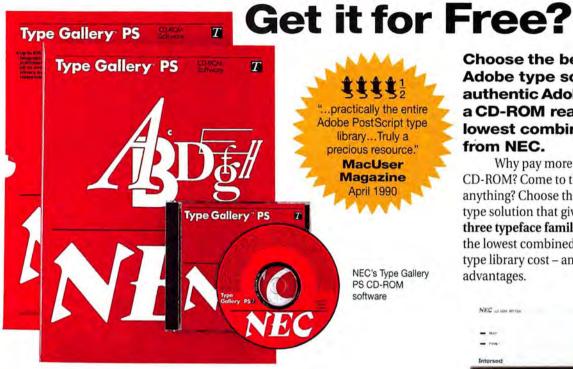
#### **But It Was Here All Along**

One Macintosh tool that has supported IAC since 1987 is HyperCard. Individual HyperCard stacks have always been able to send messages to other HyperCard stacks. This was of limited usefulness before HyperCard 2.0, because only one stack could be open on a machine at a time and a stack couldn't easily communicate across networks.

Version 2.0 breaks the first barrier, and HyperCom, from Gava, of Seattle, breaks the second. With HyperCard 2.0, you can easily have two or more HyperCard stacks



## Why Pay More for Adobe Type on CD-ROM When You Can



Choose the best CD-ROM Adobe type solution-get authentic Adobe® type and a CD-ROM reader for the lowest combined cost from NEC.

Why pay more for Adobe type on CD-ROM? Come to think of it, why pay anything? Choose the CD-ROM Adobe type solution that gives you your first three typeface families free, as well as the lowest combined CD-ROM reader/ type library cost - and other important advantages.



Educorp 1-800-843-9497

Mac Warehouse™ 1-800-255-6227

Mac Zone 1-800-258-0882

**Tiger Software** 1-800-888-4437

Offer valid for purchases made before June 30, 1991 only through dealers listed here.

Adobe and PostScript are registered trademarks of Adobe Systems, Inc., Type Gallery and Intersect are trademarks of NEC Technologies, Inc. Reprinted from MacUser, April 1990 @1990 Ziff Communications Company

#### Compare NEC's Type Gallery PS to Adobe Type on Call

	TYPE GALLERY PS	ADOBE TYPE ON CALL
Authentic Adobe type	Yes	Yes
Initial unlocking	Any 3 volumes, free	Choose 2 of 8 preselected, pay \$49-\$99
Future unlocking	Save 48%	Save 30%
Total typefaces on disc	1000+	950
Includes CD-ROM reader	Yes	No
Documentation	250 page type catalog	User Manual
Technical support	One source, reader and software	Two separate sources
Total cost	\$499*	Up to \$700**

Manufacturer's suggested retail price based on this special bundle offer available only from selected dealers listed here through June 30, 1991. \*Based on average retail price of Adobe Type on Call and currently available CD-ROM readers.

#### Now that you know the facts, you'd choose NEC's Type Gallery PS

Wouldn't you? Now you can buy the best Adobe type solution on CD-ROM for only \$499! You'll get NEC's Type Gallery PS Locked Version and the unique NEC Intersect CDR-36 CD-ROM reader. You can choose any three typeface families (up to a maximum of 15 individual typefaces) from more than 1000 Adobe typefaces on the disc. Plus, you'll save an average of 48% vs. Adobe's diskettebased SRP when you call NEC to unlock additional families.

#### Type Gallery PS from NEC – it's the best way to buy Adobe Type on CD-ROM.

Contact one of the authorized NEC CD-ROM dealers listed here to order your Type Gallery PS/CDR-36 bundle. Or call NEC Technologies at 1-800-NEC-INFO for product literature.

Please circle 117 on reader service card.

#### **POWER TOOLS**

#### **BEATING THE SYSTEM**

With HyperCard 2.0, you can easily have two or more HyperCard stacks on numerous machines on a network messaging one another and accessing each other's functionality.

on numerous machines on a network messaging one another and accessing each other's functionality. (A To Do stack, for example, might tell a database to update itself.)

HyperCom is a set of external commands and functions for communicating between stacks across an AppleTalk network. It was available for HyperCard 1.x, but HyperCard 2.0 makes it really useful. HyperCard 2.0 lets you have more than one stack open in separate windows and runs in the background under MultiFinder. It has performance enhancements that make interstack communication more powerful.

Chiefly, HyperCom adds a Tell command to HyperTalk. You use this command by typing tell xx yy, where xx is the name of a stack or list of stacks and yy is a HyperTalk command or message. HyperCom sends the command or message to the stack(s). HyperCom also includes functions for getting values back from stacks. You can, for example, send an advanced mathematical expression to a stack that does symbolic differentiation and get the answer back.

A data-entry or -editing screen on one machine can trigger a database stack (possibly on another machine) to update itself. With a little care, you can set up data-entry or-editing stacks on several machines that all access the same database. (Note that there are some thorny problems in multiuser databases that may not be adequately addressed by HyperCom. Gava says nothing about multiuser databases, and I present the example only to show that it is possible for moderately sophisticated users to explore some of the uses of IAC right now.)

HyperCard 2.0's multiple windows and background processing let you open a window on another machine off-screen while leaving the current window open. Your access to another user's machine, in other words, can be transparent (except for the performance degradation). That sounds as if it might lead to problems, but you can lock out other users from your stack or turn off HyperCom entirely. Then access to your stacks is possible only if you grant permission.

HyperCom and HyperCard 2.0 certainly make it feasible to do some tricky things. But is this really IAC? You bet. HyperCard stacks are applications, and different stacks communicating with one another does constitute IAC in the limited world of HyperCard-generated applications. And after all, Microsoft-style IAC will work only in the limited domain of Microsoft-compatible applications.

#### Transition

This is my last Beating the System column. Next month I'll be migrating toward the front of the magazine and into a different format. Bob LeVitus will be moving into this space. Having written a book on System 7.0, Bob has a lot to say about Mac system software. As for what I'll have to say, we'll see. Through Beating the System and my Card Tricks column, which preceded it, the back of MacUser has been very good to me. So have you. Thanks. See you up front.

#### Puzzie Answers

In honor of my last appearance in this space, here are the answers to some recent puzzles. The smallest number of steps in which the disk of September's puzzle can be optimized is 12, and yes, this is the worst case. The MITS documentation writer I alluded to in October is David Bunnell, whose best-known connection to the Macintosh is that he founded the first Macintosh magazine, which I'm pretty sure is still being published (it's known around these parts as "Brand W"). The solution to February's puzzle hinges on knowing that the chord

that the Macintosh plays when it starts up is diagnostic: If certain notes are missing or are played in a certain sequence, this provides clues to hardware problems, such as bad RAM.

The lucky winners of "I Beat the System" T-shirts are Hiroshi Yonamine, Tokyo, Japan, and Kevin Mark Eberhart, Atlanta, Georgia (September); James P. Connell, Hamel, Minnesota (October); Ben Hallert, Eugene, Oregon, and Nikki Johnson, Yarmouth, Maine (November); and Bill Vernon, Odessa, Texas (February).



## EXPLORER

#### Broadcast-quality video is finally coming to the Macintosh.

Forget everything you've heard about Macintosh® video. With Intelligent Resources'

Video Explorer, video will never be the same!
We've invented a

video card for the Macintosh, with incredible

real-time video processing capabilities. The Video Explorer is a multi-synchronous card that supports all

Luminance and chrominance keys

Multiple inputs

major broadcast video and computer graphic timing standards. On it you'll find a stateof-the-art custom

chip set; one of the largest and most powerful ever produced for personal computers.

Since the Video Explorer is a programmable 32-bit digital video engine, there's almost no end to the

broadcast-quality effects you'll be able to achieve. You'll have full control of video processing: frame by frame, line by line, and pixel by pixel. You'll be able to perform fades, wipes, dissolves, and digital video effects.

You can key on chrominance and luminance signals, combine multiple live video signals, and even overlay anti-aliased titles and graphics on live video.

The Video Explorer can simultaneously manipulate video signals from a variety of

sources, both live and computer generated. By genlocking to a common sync signal, a Video Explorer can accept

Anti-aliased titles and graphics

Real-time effects

INTELLIGENT RESOURCES

video from an external source as well as from internal sources cascaded through our digital video bus. This down-

stream capability allows linking of video buscompatible cards for even more sophisticated special effects.

Soon, the power of this new video technology will be unleashed. Join us as the serious fun begins! Intelligent Resources, 1626 Colonial Parkway, Inverness, Illinois 60067.

Phone (708) 705-9388 or Fax (708) 705-9410.

#### INTELLIGENT RESOURCES

Copyright © 1990 Intelligent Resources Integrated Systems, Inc. All Rights Reserved. Video Explorer is a trademark of Intelligent Resources Integrated Systems, Inc. Macintosh is a registered trademark of Apple Computer, Inc. NuBus is a trademark of Texas Instruments, Inc.

Please circle 135 on reader service card.

## **Living with Murphy**

Disk drives can be finicky beasts, and Murphy's Law is always ready to prove it — at the most awkward moments, of course.

By Thom Hogan



he world isn't very kind to someone in a hurry, and when computer equipment is involved, you can bet that good old Murphy is sneaking up behind you, ready to pounce.

Case in point: I had a lot of work to do when the holidays rolled around and made a mess of my schedule. Although I hate mixing travel and work, I didn't have much choice this time. I had columns to write, books to complete, a software manual to edit, and other work to finish before the end of the year. No problem, I thought. I'll just rent a Mac Portable to carry on my travels. (Although the thought of lugging 15 pounds around for two weeks didn't make me happy, I consoled myself by remembering that my first portable computer, an Osborne 1, weighed 28 pounds — at the time I thought that was a godsend. Of course I was younger and stupider then.)

My first mistake — which gave Murphy plenty of time to sneak up behind me — was to rent the Portable the day before I left. My second mistake was to wait until that evening to transfer work from my hard-disk drive to the Portable's internal hard-disk drive. Murphy was now leering over my shoulder. My third (and fatal) mistake was to assume that this would be a breeze. Pop! — Murphy's Law just took effect.

Sure enough, I connected my hard-disk drive to the Portable and pressed the Escape key to wake the computer up, and a few seconds later it crashed. A quick attempt to restart the Portable and boot from my hard-disk drive also failed. With three hours left before my flight, I began to panic. I unplugged my hard-disk drive from the Portable and reconnected it to my Mac II, which didn't recognize it either.

#### Time Out for a Lecture

About now you're probably thinking that all I had to do was pull out my backup disk and restore the hard disk. OK, that's sort of what I did, as you'll soon find out. But time-out for a lecture first. Something was doing a pretty good job of destroying the integrity of my hard disk. It might have been the Portable, or it might have been the hard-disk drive. But let's not allow Murphy to get a full nelson on us. Think about what might happen if your backup files were trashed by the same kind of phantom. That would leave you in a fine mess, wouldn't it? So here's the lecture.

I have two rules regarding backups, and these should be followed as closely as a monk follows his vows:

1. One backup is not enough. Backup disks can—and do—get zapped from time to time. I've had floppies die in storage or be zapped by the computer I was trying to restore. And, of course, there are fires, floods, theft, and other fabulous facts of life to worry about. (By the way, if you haven't figured out that last month's column was a hoax, I should tell you that Lemon Pledge isn't going to resurrect your data either.)

One thing isn't a hoax: Data is expensive to recover. I know because I've had to re-create two books, several fonts, and several other data

### THE EXPERT'S EDGE

I've solved problems before by junking the equipment in question, but my bank balance told me I wouldn't be able to buy my way out of this one.

files from the remnants of my backup disks. Always keep a second set of backup disks of your valuable data, and keep it in a different location than the first set. If your first attempt to restore your system destroys your backup, you still have a chance to retrieve your data. (Hint: Do the second restore on a machine you know is good.)

2. Never use your backup disks until you know what's wrong with — and have fixed — the system. In the case of my trashed hard-disk drive, this meant not trying to restore the drive until I knew what had caused the original crash or until I'd reformatted the drive and tested it enough to know that it was functioning properly. If you jump in with your backup disks before you've isolated the problem or stabilized your system, there's a good chance of losing the data on your backup disks.

#### Meanwhile, Back at the Mac

Three hours is not a lot of time in which to fiddle with a 200-megabyte hard drive, but I pulled out my usual set of fiddling utilities anyway. My hard-disk drive is set up with several utilities that supposedly make it easier to restore it in case files are accidentally erased. Symantec's SUM II has an INIT that provides duplicate information to help you restore a drive with bad sectors, missing file links, and so on. Central Point Software's MacTools Deluxe has a similar utility, which I had been using on my drive.

Unfortunately, these utilities didn't do me any good in this situation, although I'll continue to use them in the future. The problem was that the System wasn't recognizing the drive, so I couldn't even get to the MacTools utility. (Catch 22 lives — as Mac users frequently observe.) But here's the strange part, which makes me wonder how much I can trust any of the current hard-disk utilities on the market: When I tested the drive with three disk-recovery utilities (the two mentioned above and Microcom's 911 Utilities), I got three

different diagnoses. MacTools couldn't find the drive at all. SUM II diagnosed the problem as a corrupted directory and suggested formatting the drive and forgetting about the data on it. IstAid (which used to be called Disk IstAid and is now part of 911 Utilities) told me that it had found one file whose sectors weren't linked correctly but that the drive and all the files except one could be recovered to floppy disks. I didn't have Norton Utilities for the Mac, but I have no doubt that it would have reported yet a different problem.

Which utility was right? Despite 911 Utilities' mediocre performance in April's lab report (see "Surviving the Crash: Hard-Disk Recovery," Buyer's Guide page 42), it is my most trusted Mac file-recovery utility. Sure, it has a terrible user interface and is difficult to understand, but in five years of use, it has never let me down on any hard-disk problem I've encountered.

Because 1stAid told me it could recover files to floppy disks, I decided to take the time to restore any file I had changed during the previous week. I was pretty sure I had backed up all these files in their current form, but it couldn't hurt to be sure. With that done, there were only two hours left before my flight, and I was getting grouchy and a bit panicky. I didn't want to risk plugging my removablecartridge drive (which I use for backups) into the Portable, nor did I want to reformat my hard disk until I had more time to diagnose what was wrong. So I took the painful - but safe - route. I copied the files from the external cartridge onto floppies in my Mac II and then copied the floppies onto the Portable. Besides the slow read/write speed of the floppy drives, another hindrance was that my Mac II is an original with 800K drives.

This painstaking method is almost guaranteed to work, and when you're staring a deadline in the face, it's not a good time to start gambling. Moreover, by taking the floppies with me, I now had a backup of the files for the Portable. By the time I had to leave for the airport, I had the Portable's hard-disk drive set up with most of my work as well as a set of floppies to use if I still had problems.

#### The Diagnosis

Ironically, I no sooner got to my destination than I got sick. So I did very little work during the vacation, but I did catch up on my sleep. Being sick at the same time as my Mac didn't put me in a particularly good mood. Besides being even further behind in my work, I still hadn't



## UNDISPUTED CHAMPION WAITLIFTER

Raymond Lau has been lifting waits since he was sixteen.

Now quicker and more powerful than ever, Stufflt Deluxe 2.0 remains not only the number-one ranked compression program for saving disk space, but time as well.



By the way, we'd like to thank the hundreds of thousands of people who have used Stuffirband technologies. See your fevorite retailer or call Abdalin Systems at (408) 685-9175. © 1991 Abdalin Systems, Inc.

Please circle 183 on reader service card.



## Along MacAvenue, Every Sign Points to Quality

As a Macintosh user, you've already made a clear commitment to quality. At MacAvenue, we help you build on that commitment by designing the same high quality into our products and services. From our Protegé drives to our technical support, quality is the first consideration in every hardware and software product we sell.

#### No Guesswork

This means we take the guesswork out of choosing the right software and peripherals. Our engineers carefully evaluate every product to make sure it performs to exacting standards.



#### Call Us Free — Get It Tomorrow

MacAvenue gives you toll-free ordering and the best deal anywhere in overnight shipping. When you've decided on a software package or a system enhancement, call our 800 order line (800-395-6221)

and you'll get prompt and knowledgeable attention. And for only \$2, your order will be shipped to you for next day delivery by Federal Express\*.

#### **Top-Notch Tech Support**

MacAvenue is committed to providing the best after-the-sale support possible. If you every have a question about hardware or software purchased from MacAvenue, just call our toll-free technical support line (800-766-6221). If your question is about a particular application, our technicians can almost always bring up the same program on their Macs and have you running smoothly again in a few minutes. If it turns out that we need to replace any of the products we offer, we'll Fed Ex a



no shipping cost for you.

#### **Guaranteed Satisfaction**

replacement and pick up the problem item. That means

MacAvenue backs products with the best guarantees and warranties in the business. Every hardware product is covered by a 30-day, no-questions-asked, moneyback guarantee. Protegé monitors and drives have 1-year (2-year for Quantum drives) limited warranties.

We want to make sure you get what you want at the most competitive price — and that your satisfaction lasts long after delivery! So call us now!!!

\* Purchases under \$50 will be shipped UPS 2-day, still only \$2.

Call **800-395-6221** 

870



A Division of CompuAdd Corporation

## Choose MacAvenue's Protegé Line for a Great Picture or a Smooth Drive.

#### MACAVENUE ANNOUNCES THE END OF THE SCROLL BAR

Constant scrolling takes the creative joy out of graphic design — not to mention driving you crazy. And waiting for the screen to refresh can chase off the most ardent Muse. MacAvenue rescues you from the creative doldrums with a larger and sharper image of your whole design. No scrolling.

Our Protegé Display systems are value leaders in large-format Macintosh displays. Sharp screen images, flicker-free refresh rates and convenient ergonomic features such as a tilt/swivel base mean Protegé Displays are comparable to Apple and Radius products that can cost twice as much.

Berkeley Systems™ After Dark and Now Software's™ **Now Utilities** FREE! A \$169.00 Value!

The 15-inch, ultra-high resolution screen of the Protegé Full-page Display features a complete 8 1/2" x 11" page with no reduction of image size or quality. Complete with video card, it's only \$495. Or get a 2-page view with the 20" Protegé Dual-page Display for a mere \$895. Just to make sure you get full enjoyment from your Protegé Display, we bundle Now Utilities and the After Dark screen saver — FREE!

For a second opinion, ask Bob LeVitus, author of Dr. Macintosh, who says, "I love the crisp, bright image I get with a Protegé Display. And with the 30-day, no-questions-asked money-back guarantee, you just can't go wrong. I highly recommend the Protegé Display." Sure, other companies offer large monitors. But MacAvenue's prices let you actually take one home.





#### ROTEGÉ — THE BEST HARD DRIVE IN THE BUSINESS

Protegé

How can we look you straight in the face and tell you we have the best hard drive on the market? Everyone knows that the heart of any hard drive system is the drive mechanism — and it's usually the same, no matter whose name is on the product.

So what makes the Protegé drive different?

It's not just another pretty case. The Protegé's metal interior and plastic exterior — just like the Mac's — allows us to control air flow and buffer the drive noise. When you work with the Protegé, all you hear is the sound of one hand clapping! Our DiskMaster™ management software lets you set up password-protected partitions that are easily accessible via the Control Panel. ProDOS and A/UX are also supported. But don't take our word for it. Ask Robert Wiggins, MacUser's longtime business columnist, who gives the Protegé drive his "highest recommendation." Or Steven Bobker, contributing editor to MacUser and Computer Shopper who says the

Protegé is "far and away the best value on the market."

A Division of CompuAdd Corporation 800-395-6221



All Protegé hard drives

come pre-loaded with OnLocation, the amazing

Quantum drives, you'll also

receive Now Utilities fron

A \$259.00 Value

Now Software.

file-finding utility. And

as a special bonus with





## Overnight for \$2



#### NEW MacAvenue Software Paks!



#### More Fun, Less Money

The new MacAvenue Fun Pak II gives you 5 great games: Solitaire Royale, Talking Moose, Dark Castle, Apache Strike and Shanghai. More than \$200 worth of software for \$49.95! Fun Pak II. 29410......\$49.95

#### Make Life Better

The MacAvenue Better Living Pak gives ou Dinner at Eight (including The Encore Edition and The Weeknight Gourmet), QuickLetter, Synchronicity and Protector Shark. Six packages worth more than \$300! Better Living Pak. 29402.....\$49.95



#### **ME AND PROJECT SCHEDULING**

29740 \$366 ris MacProject II v1.21 ..



THE MODEM	
ipuServe	
cintosh Membership Kit v1.030576	\$23
illon Computing	
ite Knight27664	\$89
·ocom	
bon Copy Mac v1.0427708	\$119
rosoft	
Mail Workstation27676	\$83
ligy Services	
digy Startup Kit27726	\$27
tions Inc.	
gate Plus27712	\$237
inology Works	
ıceLan v1.027750	\$375



will with the WillMaker 4.0, the software

package that gives you plain inglish instructions for writing a legally pinding document. This program even explains complicated options for leaving property to minors. (All states but ouisiana).

WillMaker 4.0 (Nolo Press). 29888 .....

ps Network Bundle/DOS	27685	\$164
ps Network Bundle/Mac	27682	\$188
veling SW	Seers	
pLink Connectivity v3.2		\$99
San Programme Control		
N THE NETWORK		_
taviz	- Augusti	
actink Plus v4.5	27718	\$128

N THE NETWORK	
taviz	
acLink Plus v4.527718	\$128
rallon Computing mbuktu v3.127667	\$95
ignia Solutions	393
oft PC AT EGA Add-on Module27716	\$125
oft PC v1.327714	\$245



ON THE LEARNING CURVE		
Broderbund Software		
Calculus v1.2	27064	\$58
		\$58
Geometry v1.2		
Physics v1.2		\$58
Type! v1.0	27958	\$18
Davidson & Assoc.		
AlgeBlaster Plus		\$37
Math Blaster Mystery		\$29
Math Blaster! v1.0	27968	\$29
Electronic Arts		
Mavis Beacon Teaches Typing	28056	\$32
Goldstein & Blair		
Mac Bible, 3rd edition	28026	\$24
Mac Bible (Super)	28028	\$35
Great Wave		
KidsMath v1.1	27990	\$26
KidsTime v1.1	27988	\$26
NumberMaze v1.1		\$26
Individual SW		
Training for Pagemaker	28030	\$38
MECC		
Exploring Microsoft Works	28032	\$18
Number Munchers		\$29
Word Munchers	28036	\$29
Sensible Software		
Sensible Grammar v1.6.2	28010	\$5
Cimon & Schuster		-
Typing Tutor	28008	\$28
Visionary Software		
Synchronicity v2.5	28040	\$48

Synchronicity v2.528041	0 348
JUST FOR THE FUN OF IT	
Accolade	
Mean 182869	0 \$27
Ishido28770	6 \$32
Stratego2877.	2 \$31
Activision	
Cosmic Osmo2870	0 \$43
Manhole2869	6 \$29
Manhole (CD ROM)2869	8 \$36

Addison - Wesley Stupid Mac Tricks. 28750 \$19 Broderbund Software 28770 \$32 Playroom SimCity Supreme (Mac II)... SimCity v1.2.. SimEarth ..... 28678 \$29 Carmen San Diego Europe 28674 \$29 Carmen San Diego USA. 28676 Carmen San Diego World... Carmen San Diego Time... 28672 .28774 Bullseye Fokker Tri-plane v2.02... 28682 Casady and Greene Mission Starlight.... Sky Shadow 28754 \$29 Centron Casino Master 28758 \$48 Casino Master Deluxe.. Electronic Arts Chuck Yeager Flight Simulator ... Earl Weaver Baseball ..... .28656 \$32 28768 Pipe Dream 28740 \$17 In-Line Design 28739 \$32 Bomber v2.0 Darwin's Dilemma 27840 Tesserae. 27838 \$30 Sierra-On Line 28724 \$29 Kings Ouest 1 Kings Quest 2 Kings Quest 3 28726 \$29 \$29 .28728 Software Toolworks Chessmaster 2100... .28748 Life & Death 28658 \$32 Spectrum Holobyte Faces ...... Falcon v2.2. 28766 28614 Tetris 28606 \$22 Welltris XOR MacGolf MacGolf Classic 28628 \$52 28756 NFL Challenge v1.2 28630

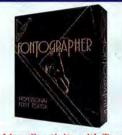


Inline Design. A fast-moving board game that challenges you to remove all but one piece, Tesserae is addictive fun in either color or monochrome. A variety of layout shapes and 3 levels of play.

Tesserae (Inline Design). 27838.....\$30







#### More Creativity with Type

Create truly unique typefaces with the help of Fontographer 3.1. You can scan in type or start from scratch; Fontographer offers an auto-trace feature and tools to draw your own. Also lets you edit bitmaps for screen fonts.

Fontographer 3.1 (Altsys). 29910.....\$249

Aldus	
FreeHand v3.029785	\$389
Personal Press	\$204
Baseline	
Color MacCHEESE v1.0529310	\$57
Claris	
Claris CAD v2.029207	\$639
Claris MacDraw Professional	\$289
Claris MacPaint v2.029202	\$92
Generic Software	
Generic CADD29280	\$372
Paracomp	
Swivel 3D Professional v1.029294	\$437

#### GRAPHIC ART COLLECTIONS Multi-Ad Services ProArt Holidays. 29876 ProArt Sports ... 29878 · Swivel Art v1.0. 29308 \$82

#### FilmMaker 29900 \$437

viore v3.030003	\$203
CERTIFICATE AND AWARD GENERATORS	
raderhund Software	

Broderbund Software Print Shop v1.3.129836	\$35
GRAPHICS UTILITIES	
Frame Technology FrameMaker Mac29864	\$819

MicroSoft	
QuickBasic v1.027590	\$64
Spinnaker	
PLUS v2.027826	\$285
Symantec	
Just Enough Pascal v1.027582	\$48
THINK C v4.027586	\$165

DO IT YOURSELE PROGRAMMING

THINK Pascal v3.027584	\$166
OPTICAL CHARACTER RECOGNITION	
Deet	

Recognize!.



FilmMaker from Paracomp gives you professional-quality animation with features such as real-time control over position, scale and rotation of animated objects, as well as full-screen anti-aliasing. And with the help of FilmMaker, your presentations also will take on new power.

FilmMaker (Paracomp). 29900......\$437







30640 \$479

## Customer Service is Our Most Important Product

MacAvenue Carrying Case.

3.5 Diskettes 1.44MB 10Pk

Sophisticated Circuits PowerKey

SOUND INTERFACE

Tripplite

SpikeBar SK6-6

Articulate Systems

Voice Navigator II

Farallon Computing

Sony 3.5 Diskettes 800KB 10Pk...

MacAvenue Carrying Case Extended Kybd .. 26901

26898

57440 \$24 95

57401 \$13.95

23736 \$649

25030

40510



#### DayStar Gives You Top Speed

When you're ready for serious highend performance up to 50 MHz speed - you need

DayStar Digital's PowerCache IIci. Plug in this turbo-charged cache card and your IIci will be the fastest Mac

PowerCache 40 MHz IIci with co-processor (D PowerCache 50 MHz IIci with co-processor (D

See listings for other DayStar PowerCach

#### ADB Mousestick 25286 \$66 DataDesk Mac 101 Keyboard Platnm (Plus). 25185 Mac-101 Keyboard, ADB. 25180 \$134 \$134 Mac-101 Keyboard Beige (Plus) 25181 SWITCHBALL 25183 \$98 SWITCHBOARD. 25182 Kensington Turbo Mouse ADB 25281 Turbo Mouse Plus 25280 \$107 MacAvenue 101 Extended Keyboard ADB. .25186 \$99 MicroSpeed

alive, faster than even the IIfx.

wicrospeed		
MacTrac (SE, II, IIgs)	.25285	\$75
Mouse Systems		
Little Mouse	.25283	\$75
Trackball ADB	.25284	\$69
Seiko		
DT3600 Digitizing Tablet	.23734	\$295
ACCESSORIES		
American Power UPS 110SE		
American Power	2/202	*207
LIDS 3704:	20292	\$207
UPS 370ci	.20294	\$329
QuadraLink	25017	1200
Bernouilli	20917	\$205
Bernouilli B33C 44MB Tape Cartridge	57904	595
Calcomp	.3/004	373
WZ	26018	\$157
Cover-Up	.20210	313/
Diskette Wallet 10pk (alligator)	26909	\$7.50
Diskette Wallet 10pk (blue)		
Diskette Wallet 3pk (alligator)	26911	\$5.50
Diskette Wallet 3pk (blue)	26917	\$5.50
Mac Plus KB Skin (81 Key)	25780	\$14.95
Mac Plus KB Skin (w/ # Pad)	25781	\$14.95
Mac SE/II 101 KB Skin	25787	\$14.95
Mac Plus/SE Dust Cover	76894	58
Fellowes		30
Compact Personal Shredder PS 50	52655	\$119
Inland		
3 Mode Surge Protector	40505	\$14 50
InnovativeTechnology		. ,
InnovativeTechnology The Library (grey)	26903	514
The Library (black)	26905	\$14
Interex		21.7
9 Pin Male to 9 Pin Male	26298	\$7.95
Keyboard Replacement Cable, 3ft	76900	\$7
Mac 128/512 to Hayes DB9 to 25pin, 6ft		
Mac 128/512 to Imgwrtr DB9 to 25pin.		
Mac to SCSI 25pin M to 50pin M 2ft		
Mac to SCSI System Cable, 6ft	26290	\$17
MacPlus Peripheral Adapter cable, 1ft	26283	\$8
MacPlus, SE, II to Apple Modem	26284	58
MacPlus, SE, II to Hayes DIN8 to 25pin		
MacPlus, SE, II to Imgwrtr DIN8 to 25pin		
MacPlus, SE, II to Imgwrtr II DIN8 to DIN8	26200	58
Mini DIN-8 to Mini DIN-8 Null		
SCSI Terminator, 50pin M/F Daisy-Chain	26205	\$18
SCSI Terminator, Sopin male	26706	\$18
Irwin Magnetics	20270	310
External Tape Back-Up 5040/60	22022	\$529
External Tape Back-Up 5080/120	23032	5719
Kensington	23033	3/19
Apple RGB Anti-Glare Filter	24001	5/1
Mac II Monitor Extended Kit		
Mac II Monitor Stand	25500	
tyrac it iyloriitor Stand		\$64



'Cream of the 2-D Crop" - Infoworld

Generic CADD from Generic Software gives you powerful computer-aided design features and sophisticated tools - all the tricks of the trade — at a price that's only a fraction of other CAD package prices.

Generic CADD (Generic SW), 29280,...\$372

Kensington (continued)		
Mac II System Stand	26887	\$24
Masterpiece Mac II	26893	\$103
SE Anti-Glare Filter (beige)	26882	\$32
SE Anti-Glare Filter (platinum)	26883	\$32
Security Kit	26884	\$33
System Saver Plus (beige)	26888	\$64
System Saver Plus (platinum)	26907	\$64
System Saver SE		\$63
Tilt/Swivel Monitor Stand		\$24
Universal Printer Stand	26896	\$17
MacAvenue		
Fuji Rainbow Diskettes-1.44M DS/HD	47496	\$15.95
Keyboard drawer		\$19
Teak 3.5 Double Rolltop Box (90)		529
Teak 3.5 Single Diskette Box (45)		17.99
Teak Keyboard Drawer		\$69

DayStar). 23651\$1167 DayStar). 23649\$1993	MacRecorder 23730 Passport Designs MIDI Interface 23732	\$158 \$76
he cards.	Writing and Publishing	
	WORD PROCESSING, WRITING	
F1-52 W (1)	Ashton-Tate	2552
	FullWrite Professional v1.530601	\$215
- THE PARTY 17	Claris MacWrite II v1.130586	\$142
经主要 医上心的	Microsoft	
THE REAL PROPERTY.	Microsoft Word v4.030582	\$245
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Microsoft Write v1.030584	\$83
A A	Nolo Press	
M. San Marie	WillMaker v4.0	\$37
The work	WordPerfect	
100 100 100 100	WordPerfect Mac v2.0 30591	\$298

PAGE LAYOUT PUBLISHING		
Aldus		
PageMaker v4.0	29781	\$497
Claris		
Claris SmartForm Designer	29200	\$289
Ventura		
Ventura Publisher v3.0	29906	\$582

PeltaPoint		
Taste	30638	\$86
expertise		
MacProof v3.2.3	30631	\$115
ifetree		
Correct Grammar v2.0	30633	\$45
leference Software		
Grammatik Mac v2.0	30634	\$50

FONTS AND FONT UTILITIES	
Adobe	
Adobe Plus Pack v1.0	\$119
Streamline v2.0	\$124
TypeAlign v1.0.429826	\$59
TypeManager v2.029825	\$57
Broderbund Software	
Typestyler30450	\$115

#### More Serial **Ports**

Expand your system's expandability. Applied Engineering's easy-to-install

QuadraLink lets you add

four additional serial ports to your Macintosh. Includes a "shadow driver" so that all the new ports will be recognized by virtually all software.

QuadraLink (Applied Engineering). 26917 .....\$205



INTEGRATED/BUNDLED APPLICATIONS  Microsoft	
	5199

ChipSoft		
Turbo Tax	28500	\$51
DAC		
Easy Light Checkbook Acctounting va	2.028475	541
Intuit Quicken v1.5	án i en	***
	28458	\$39
Meca Managing your Money v4.0	28467	\$142
Reality Software WealthBuilder v1.0	28496	\$145
Softsync Accountant Inc. Professional v2.0	28480	\$345
SoftView		-
if x: Personal Tax Analyst	28498	\$47
MacInTax 1040 Federal 1990	28502	\$59
Software Toolworks		
Dollars & Sense v5.0	28465	\$86
Timeslips		
Timeslips III v2.0	28504	\$196
DATA ANALYSIS AND PRESEN	TATION	
Odesta		
Data Desk v3.0	27818	\$458

DATA ANALI SIS AND PRESENTATION	
Odesta	
Data Desk v3.0,27818	\$458
DATABASE	
Acius	
4th Dimension v2.127780	\$485
File Force27820	\$247
	\$216
B.S.	
DataClub v1.1	\$199



#### **HP Printing Utility**

MacPrint lets you print from any Mac application to the Hewlett-Packard LaserJet and DeskJet series printers as well as the Epson EPL 6000. Convenient Chooser-level driver selection provides straight forward Mac printing.

MacPrint v1.2 (Insight). 30428

Fox Software		
FoxBase + Mac v2.1	27791	\$292
Microsoft		
Microsoft File v2.0A	27798	\$123
MySoftware		
MyAdvanced MailList v2.0	27817	\$29
Preferred Pubs		
Database v1.5	27834	\$67
Sensible Software		
Bookends v1.2	27830	\$51

#### OFFICE PRODUCTIVITY PROGRAMS

Microsoft		
Microsoft Mail v2.0	30496	58
Power Up		
Letter Writer Plus v1.0	30440	\$5

Informix	
Wingz v1.1	\$2
Microsoft	
Microsoft Excel v2.230180	\$24



Mac II Stand and Cable Kit



## Overnight for \$2





Enhanced microLaser

Texas Instruments has added

16 page-per-minute printing speed to the popular microLaser, awarded 4 1/2 mice from MacUser. The new TI microLaser XL has the same quality output as the original microLaser but has added upgrade

NEW! TI microLaser XL (35-font). 22859..\$3095

#### Hardware

ORAGE DEVICES		
ntum		
	24300	* 170
MB LPS External Protegé		\$479
MB LPS External Protege		\$669
MB External Protegé		\$979
AB LPS Internal - (Ilcx,ci)	24194	\$349
MB LPS Internal - (Ilcx,ci)	24195	\$539
MB Internal - (Ilcx,ci)		\$899
MB LPS Internal - (SE-IIx)		\$349
MB LPS Internal - (SE-IIx)		\$539
MB Internal - (SE-IIx)	24200	\$899
ate		
AB External Protegé	24380	\$345
AB External Protege		\$395
AB External Protegé		\$525
AB Internal - (Ilcx,ci)		\$295
AB Internal - (Ilcx,ci)		\$325
MB Internal - (Ilcx,ci)	24186	\$465
MB Internal - (SE-IIx)		\$295
MB Internal - (SE-IIx)		\$325
AB Internal - (SE-IIx)		\$465
Avenue		
tegé HD Carrying Case	26908	\$24



------

#### The Future of Communication

MacAvenue's Protegé modems are eliable, easy to operate and priced to move! Each modem is shipped with QuickLink II software.

Protegé 2400 SendFax9600, 22316... Protegé 2400 external. 22315 Protegé V.42bis. 22317.

olied Engineering		
5 800K Floppy Drive24735	\$205	
gh-Density 3.5 1.44K Floppy Drive24736	\$239	
na Communications		
ynaFile 1,2MB DF020024732	\$550	
vnaFile 360K DF010024738	\$519	
ynaFile 360K/1.2MB DF010224733		
ynaFile 360K/1.44MB DF010424737		
tsu		
0K Floppy Drive24731	599	
iega		
rnoulli 40-4024384	52195	
ac 1B Interface Kit23834		
rtable 44MB24385	\$1429	
nect Technology		
0K 5.25 Drive24740	\$299	
ive 2.4 (3.5) 24730		

PRINTERS, SCANNERS AND FAXES		
Adobe		
Postscript for LJ-II	38432	\$299
Complete PC		
Complete Page Scanner	22753	\$758
Dest		
Personal Scan w/ Recognize! Software	22762	\$699
Digital Vision		
Computer Eyes B/W	22758	\$198
Computer Eyes Color		\$348
Dove		45.0
DoveFax-External	22701	\$297
Epson		427
ES-300C Color Scanner w/ I/F	22765	\$1824
Kodak		
M150 Mac Portable	22855	\$519
Logitech		****
ScanMan 32	22751	\$319
MicroTek-IMSI		
Microtek 300Z Color Scanner	22755	\$1945
Orchid		
OrchidFAX Modern	22702	\$457
Policyc		4.0,
Tefax RA2110	22700	\$895
Seiko		****
Label Printer	22852	\$184
Labels for Seiko Label Printer	35623	
Caikocha		21112
Personal Printer SL20000AP	22857	\$235
Texas Instruments		
17 Font microLaser w/ ATalk board	22856	\$1429
17 Font microLaser XL w/ ATalk board		\$2795
35 Font microLaser w/ ATalk board		\$1749
35 Font microLaser XL w/ ATalk board		\$3095
Envelope Feeder	23056	\$279
Legal Paper Tray		\$59
microLaser Toner Cartidge		\$46

Applied Engineering	
DataLink Express w/ MNP-5/Send Fax22312	\$23
DataLink/Mac w/ MNP-5/Send Fax options22313	\$27

Global Village	
Teleport Modem22311	\$134
Teleport Fax 960022314	\$195
Hayes	
Smartmodem 960049578	\$899
MacAvenue	
2400 External w/o SW49557	\$119

COMMUNICATIONS-NETWORK		
• • • • •		
Asanté		2001
MacCon+ IIE thk/thn		\$375
MacCon+ IIET thk/UTP		\$375
MacCon+ SE30E thk/thn		\$375
MacCon+ SE30ET thk/UTP	22531	\$375
MacCon+ SEE thk/thn	22525	\$295
MacCon+ SEET thk/UTP	22532	\$295
Dayna Communications		
EtherPrint	22541	\$355
Farallon Computing		
Liason v3.0	27744	\$259
PhoneNET Connector DB-9	22511	\$31
PhoneNET Connector Din-8	22513	\$31
PhoneNET Repeater	22517	\$313
PhoneNET StarController		\$824
Portable Pack	22519	\$329
nterex		
Localtalk connector DB-9 to Din 3	22520	\$32
Localtalk connector Din-8 to Din 3	22521	\$32
Phone Connector DB-9	22522	\$25
Phone Connector Din-8 w/ cable	22523	\$25
Nuvotech		
Nuvolink II	22536	\$275
Nuvolink SC	22535	\$389
Shiva		
NetModern V.32 9600 baud	22528	\$1425
NetSerial X232	22504	\$275
Technology Works		
Mac II Ethernet Kit	22539	\$275
Mac II/10t Ethernet Kit		



.\$179

### Double-Up™with DiskDoubler from Sigma Designs. This NuBus card compresses and decompresses graphics, data and application files fast. Double-Up with DiskDoubler (Sigma). 23737..... A Great Deal! \$54/Megabyte Get the most processing power out of your Mac: Only the best surfacemounted 80 nanosecond memory products. Call for pricing chart. 2 x 1MB SIMM Kit -80ns (Technology Works). 25480.....\$108 4 x 1MB SIMM Kit —80ns. 25482 .....\$216

2 x 4MB Module for Mac IIsi, LC, IIci. 25492.....\$560



MacAvenue	
Protecé Dual Page Display w/ Mar II Card, 22017	\$805

riotege Duai rage Display W/ Wac ii Calu22017	3073
Protegé Dual Page Display w/ SE Card22015	\$895
Protegé Dual Page Display w/ SE/30 Card .22016	\$895
Protegé Full Page Display w/ Mac II Card22013	\$495
Protegé Full Page Display w/ SE Card22011	\$495
Protegé Full Page Display w/ SE/30 Card 22012	\$495
Micron	
Mac II 8-Bit 1024X76823544	\$585
Mac II 8-Bit 640X48023543	\$345
SE/30 8-Bit 1024X76823542	\$585
SE/30 8-Bit 640X48023541	\$345
RasterOps	
RasterOps 24STV23658	\$1549
RasterOps 8523536	\$459
RasterOps 24523537	\$759
RasterOps 264/SE3023539	\$685



RasterOps 36423540	5974
Grey Scale 19" monitor GS for Mac II22007	\$1614
Seiko	
14" Color RGB22002	\$595
20° Color w/ 8-Bit 1024X768 Mac II22018	\$2770
20" Color w/ 8-Bit 1024X768 SE/3022019	\$2770
20" Trinitron Color Monitor w/o card22009	\$2395
Sigma Designs	4 225
Colormax 19" monitor w/ Mac II adapter 22000	\$4645
L-View Multi-Mode 19" w/ Mac II adapter .22008	\$1495
PageView 15" w/ Mac II adapter22100	\$1050
PageView 15" w/ SE adapter22101	\$999
PageView 15" w/ SE/30 adapter22106	\$1050
SilverView 21" w/ Mac II adapter22104	\$1599
SilverView 21" w/ SE adapter22107	\$1599
SilverView 21" w/ SE/30 adapter22103	\$1599
MacAvenue	
Full Page Monitor w/o card22010	\$395

#### **ACCELERATOR AND EXPANSION BOARDS** DayStar

030 25MHz Ilcx w/ co 6888223640	\$149
030 33MHz Ilcx w/ co 6888223641	\$189
030 40MHz Ilcx w/ co 6888223642	\$199
030 50MHz Ilcx w/ co 6888223643	\$259
50MHz PowerCache Ilci w/coprocessor23649	\$199
50MHz PowerCache Ilci w/o coprocessor 23650	
40MHz PowerCache Ilci w/coprocessor23651	
40MHz PowerCache Ilci w/o coprocessor 23652	594
Technology Works	
Ilci Cache Card w/64K23648	\$26

MEMORI EXPANSION	
Applied Engineering	
1MB Upgrade for MacRam Portable Card 25488	\$359
MacRam Portable Card w/ 1MB25487	\$499
MacAvenue	
1MB TI Laser Memory Upgrade25489	\$159
Interex	
Tool kit; 3 pieces26881	\$15
Technology Works	
2 X 1MB SIMM Kit 80ns25480	\$108
4 X 1MB SIMM Kit 80ns25482	\$216
4 X 4MB II/IIx SIMM Kit25490	\$1195
4 X 4MB Ilfx SIMM Kit25491	\$1399
4 X 4MB SIMM Kit 80ns25481	\$1120
Mac Portable 1MB Upgrade Kit25485	\$389
Mac Portable 3MB Upgrade Kit25486	\$1195
2 X 4MB Module for Mac Ilsi, LC, Ilci25492	\$560
3MR Module for Mar Classic 25495	\$215



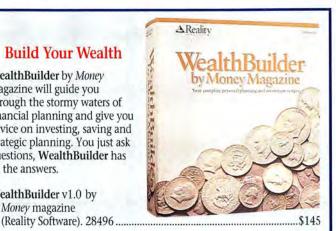


## *Try MacsFax* 800-933-9002

#### **Build Your Wealth**

WealthBuilder by Money magazine will guide you through the stormy waters of financial planning and give you advice on investing, saving and strategic planning. You just ask questions, WealthBuilder has all the answers.







#### **New Connectivity Solution**

LapLink Mac has always been a great way to transfer files between Macs or between Macs and PCs. Now, LapLink Mac III Connectivity Pac includes a unique universal cable and improved software to make transfers even easier.

LapLink Mac III Connectivity Pac 3.2 (Traveling Software). 27711...



#### Safety, Maintenance and Repair Utilities

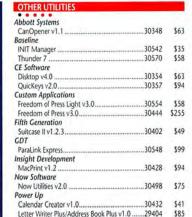
DATA ORGANIZATION	
On Technologies	
OnLocation v1.030434	\$7:
DATA STORAGE, MANAGEMENT/REPAIR	
Baseline	
APB Express v1.030544	\$5

		_
Baseline		
APB Express v1.0	30544	\$55
Central Point		
Mac Tools Deluxe v1.01	30365	\$79
Microcom		
911 Utilities v1.0	30550	\$89
Complete Undelete v1.0	30420	\$49
Salient		
Disk Doubler v3.0	30546	\$47
Symantec		
Norton Utilities for the Mac v1.1	30436	584
Sum II v2.0	30340	\$98

SHORTCUT AND TIME SAVING UTILITIES	
Central Point	
Copy II Mac v7.230362	\$24
Zedcor	
Deskworks30524	\$228
SCREEN SAVER UTILITIES	
Berkley Systems	
After Dark v2.0	\$24

VIRUS DETECTORS AND ERADICATORS	
Protector Shark	\$31
Pyro v4.0	\$25
Fifth Generation	

• • • • •	
Microcom	
Virex30413	\$59
Symantec	
SAM v2.030342	\$67





ON THE LEARNING CURVE	
Wayzata	
US Civics28012	\$79
World Factbook 198928014	\$79

**CD-ROM Software** 

GRAPHIC ART COLLECTIONS	
NEC	
Clip Art 3D29880	\$245
Image Folio29882	\$245
Photo Gallery29884	\$246
Type Gallery29886	\$245
Wayzata	
Quick Art29302	\$187
US Seals29304	\$55

DataClub





uses Virtual
Server™ technology to
create a powerful shared disk for your entire network. Maximize resources and simplify information sharing with the most cost effective network that is easy to use, manage and expand.

DataClub 1.1 (International Business Software). 27748 ....





## Why Buy From MacAvenue?

That's as easy as 1, 2, 3!



#### 30-Day Money-Back Guarantee

Every hardware product and every office accessory MacAvenue sells will give complete satisfaction. If not, return it in the original packaging within 30 days of purchase for a full refund. Consumable items, opened software, videotapes and shipping costs are not refundable.



#### Toll-Free Technical Support • 90-Day **Product Replacement**

If you experience a problem with anything you purchase from MacAvenue, call our product support staff at 1-800-766-6221 weekdays from 8:00 am to 7:00 pm, CST. We will replace the item and pay Federal Express shipping both ways.



#### **One-Year Limited Warranty**

For up to one full year after your purchase, MacAvenue will replace or repair (at our option and without cost to you) any product with which you are not completely satisfied, and we will pay for Federal Express return freight to you.

Everything at MacAvenue is designed to give you the affordable, reliable Macinto products you want when you want them.

- Orders placed by 8:00 pm, CST, weekdays for in-stock items ship the same d (barring system failure) with a \$2 overnight delivery charge. Purchases under will be shipped UPS 2-day, still only \$2.
- For your convenience, we accept VISA, MasterCard, Discover or American Exp no surcharge will be added.
- If you use a credit card to pay for your order, your account will not be charge until we ship your order.
- If we have to split an order into two shipments, you will be charged only one shipping. All orders under \$30 will be shipped UPS Ground.
- COD orders accepted (Add \$8, including shipping)
- Corporate and institutional purchase orders accepted, \$500 minimum for the order, \$50 thereafter.

Look for MacAvenue products in the following CompuAdd Superstores:

- Chicago, Illinois Golf Rd.
- Louisville, Kentucky Hurstborne Ln.
- Portland, Oregon 117th Ave

Austin, Texas — Shoal Creek

Watch for More Store Openings Soon!



Call now for FREE catalog!

800-395-6221

Mac Avenue

A Division of CompuAdd Corporation

12303 Technology Boulevard — Austin, Texas 78727

MacAvenue is a trademark and CompuAdd is a registered trademark of CompuAdd Corporation. Mac, Macintosh, HyperCard, and Apple are registered trademarks of Apple Computer, Inc. All other trademare the property of their respective companies. All return items must be accompanied by a return merchandise authorization (RMA) number. Prices and product descriptions are subject to change witho notice. Neither CompuAdd nor MacAvenue is liable for damage due to omissions or typographical error

#### **POWER TOOLS**

#### THE EXPERT'S EDGE

diagnosed the hard-disk drive's problem. I've worked around such problems before by simply junking the equipment in question and purchasing new stuff. This is a great way to keep up with the latest and greatest hardware, but it isn't easy on the bank account. A look at my bank balance told me I wouldn't be able to buy my way out of this problem, so I started looking closely at the Portable and the hard-disk drive in question.

The Portable seemed to be fine — it recognized everything else I hooked up to it. When I returned it to the rental store and told the people there my problems, they did a complete hardware checkup too. No smoking gun at that end.

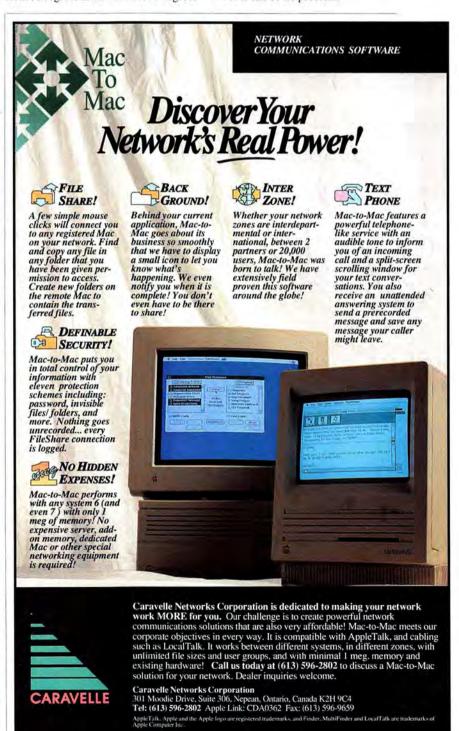
So it had to be my hard-disk drive, right? Thinking back to the last few months of hard-drive use, I remembered two symptoms I had previously overlooked. About a month before the crash, the harddisk drive had consistently failed to load Adobe Type Manager and had displayed some unusual (and never repeated) alert boxes. On two occasions, my Mac II had crashed just after saving a file, which was also quite unusual, because most application-caused crashes are triggered by things such as launching DAs or printing. I began to wonder if something on my hard-disk drive had slowly become a problem and had eventually pushed the unit over the edge.

I'll never know for sure, but because ATM was the one file 1stAid couldn't recover, I suspect that it was the unlucky file that ended up in the drive's problem sector. My best guess is that the sector containing the ATM directory information was failing (which explains why ATM wouldn't load) and that it eventually failed completely. This may be why SUM II found directory damage. Moreover, an error in the directory section of the hard drive would likely upset the System, which explains why the disk wouldn't boot and the Portable couldn't recognize it.

Now comes the tougher part—figuring out how that problem had begun and why it eventually reared its ugly head. I'd used this hard-disk drive for almost 18 months without having to reformat it, which may have been part of the problem. Hard-disk drives drift over time. Think about the close tolerances necessary in order to stuff all those megabytes onto small platters that may be only 3.5 inches in diameter. We're talking fractions of millimeters separating tracks. As with any mechanical device, constant use can eventually loosen a hard drive's mechanism sufficiently so

that there is a measurable difference in where tracks are being written on a disk. Temperature changes can also play a part by causing the mechanism to expand and contract (my office temperature ranges from 60 degrees in the winter to 95 degrees

in the summer). The net effect is that the drive's heads may try to place and read tracks at slightly different positions on the platter as the drive ages. This can be a major problem, as I suspect it was for me—or it can be no problem.



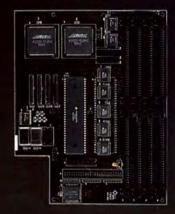
Please circle 420 on reader service card.

## give NewLife™ to your old mac



#### NewLife 1

- CPU upgrade for the Mac 128K, 512K and 512Ke
- 20% faster than a Mac Plus
- SCSI port for hard disk drives
- 8 SIMM sockets allow up to 4Mb using 256K and 1Mb SIMMs



#### NewLife 2

- CPU upgrade for the Mac 128K, 512K and 512Ke
- Connect a larger monochrome monitor to your system
- Lets your Mac run current software
- 20% faster than a Mac Plus

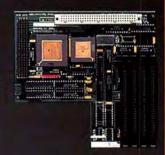
#### NewLife 25Plus

- 68030 accelerator and 68882 math co-processor running at 25 MHz for the Mac 128K, 512K, 512Ke and Plus
- yielding Mac IIci performance levels



#### NewLife 25SE

- 68030 accelerator and 68882 math co-processor running at 25 MHz for the Mac SE
- yielding Mac IIci performance levels





#### NewLife SE video display interface card

- add a low-cost larger monitor to your SE system
- flexible connectorization scheme supports most PC and Mac monitors



... and
for the ultimate
in computing power,

#### NewLife 33 SE

- accelerator running at 33 MHz for the Mac SE
- performance in the Mac IIfx class

these ... at a fraction of the cost

So take that old Mac out of the closet and put it back to work with today's software.

Toll free:

Fax:

(800) 267-7231

Telephone: (613) 592-5080

(613) 592-1320

603 March Road, Kanata, Ontario, Canada K2K 2M5

Newbridge Microsystems,

NewLife™ is a trademark
of Newbridge Microsystems.
Other brand and product names
are trademarks of their respective holders.
© 1990, Newbridge Microsystems.
All Rights Reserved.

CABD design

## POWER TOOLS THE EXPERT'S EDGE

One thing IBM PC users have that Mac users don't is sophisticated disk-drive utilities. A utility called SpinRite II automatically looks for track drift and marginal sectors. It can reformat the entire track in question on the fly, without affecting the underlying data. Others, such as Disk Technician Pro, test exhaustively for marginal sectors - the ones that are causing retries but are not yet bad enough to make the write process fail completely. Why utilities such as these haven't appeared for the Mac is a puzzle to me. Maybe we Mac users aren't as technically oriented as the average PC user (hah!). Whatever the reason, as our drives age, we are going to experience the unfortunate results of not having nearly enough earlydetection software available.

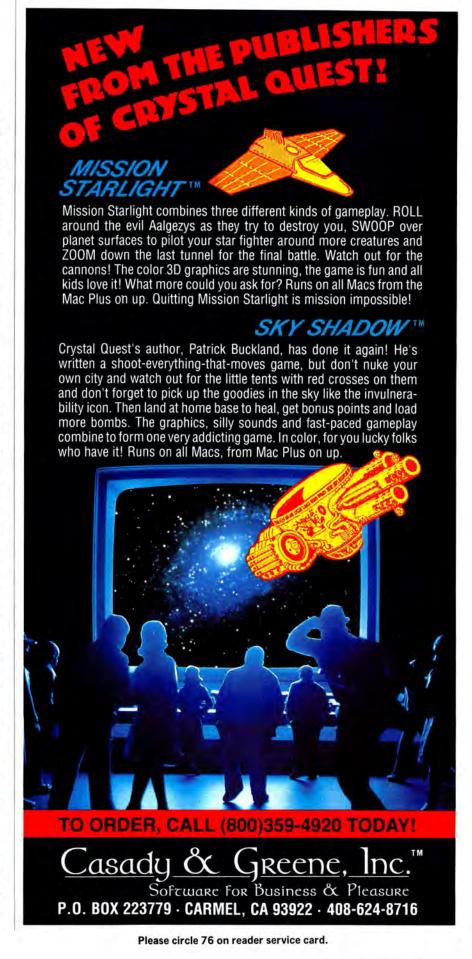
#### **Some Preventive Maintenance**

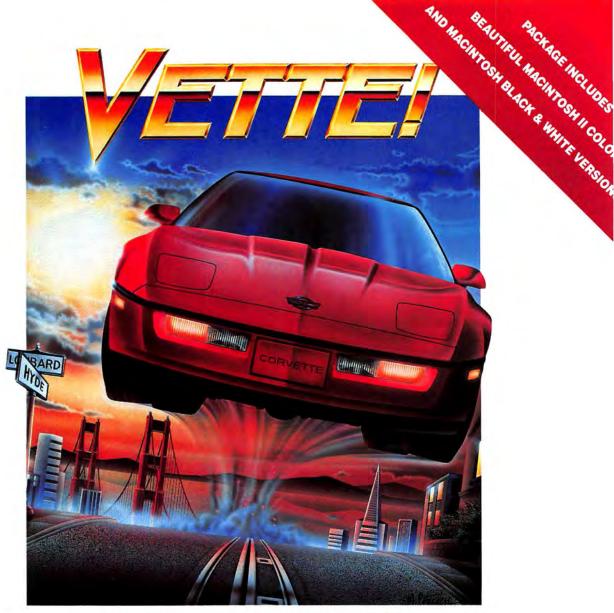
Fortunately, you can do a few things to prevent such problems - reading last month's hard-disk-recovery lab report is a good place to start. Here's another heavyduty prescription, which you aren't going to like but should go a long way toward preventing disk troubles. Once every six months, back up your entire hard disk, reformat it with the low-level formatting utility that came with the unit, and restore it file by file. This isn't a fast operation it takes longer to format my 210-megabyte drive with this method than it does to back up the files on it. But afterward, the harddisk drive's sense of where the tracks are supposed to be is totally in sync with where they actually are. An hour of pain can give you a month of problem-free operation.

Here are Dr. Thom's recommendations:

- Make a complete backup of your files.
- 2. Get out the hard-disk drive utility, and reformat the drive.
- 3. Run a test of the drive if you have the appropriate software (SUM II, Norton Utilities, 911 Utilities, MacTools Deluxe, or the drive's own utility).
- Install a fresh System on the harddisk drive from the disks supplied by Apple.
- **5.** Add your System enhancements, font files, DAs, and other goodies.
  - 6. Restore your applications.
  - 7. Restore your data files.

These seven steps can help your harddisk drive operate at its best level, plus they optimize the files for faster performance. And following these steps may mean that — if you're lucky — you can give Murphy the slip.





## IT'S RED HOT!

With VETTE!™ Spectrum HoloByte™ has just established the new standard for car racing simulations. We have taken our award-winning FALCON™ simulation technology from the sky and put it on the streets in VETTE! Nothing else compares. Dare to test your racing skills against sexy European sports cars through the streets of San Francisco past famous landmarks, dodging traffic and pedestrians, flying up and down those steep San Francisco hills. Why limit yourself to

boring race track or freeway driving simulations when you can thrill to the chase through one of the most alluring cities in the world. **VETTE!** – **THE NEW STREET RACE SIMULATION!** 

#### FEATURES:

- · Outstanding 3-D solid modeling graphics
- •Accurate mapping of San Francisco streets and landmarks
- Option to choose from 4 Corvettes (1989 stock model, ZR1 King of the Hill, the



#### Calloway Twin Turbo or Sledgehammer)

- Real maneuverability including U-turns
- Test performance factors of each Corvette on a dynamometer
- Amazing realism in terrain and buildings
- · Varying difficulty levels
- •Landmark to landmark courses (You select the best route.)
- Multiple view perspectives (helicopter, front and side)



## Spectrum HoloByte

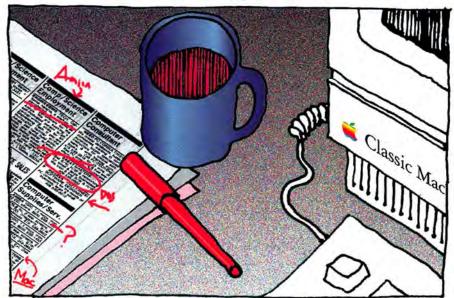
A Division of SPHERE, INC. 2061 Challenger Drive Alameda, CA 94501 (415) 522-0107

Available on Macintosh/Macintosh II color and IBM. Please circle 372 on reader service card.

## **How to Hire a Programmer**

Got a great product idea but can't program your VCR, let alone a Mac application? Here's how to find the technical help you need.

By Kurt W. G. Matthies and Thom Hogan



rogramming is a specialized art form, requiring the practitioner to have analytic as well as synthetic skills. Only those people who can think logically and have an eye for detail (as well as a constitution that thrives on all-night sessions) can achieve any measure of success.

Programming is not a career for everyone, yet we all get ideas for products we're sure would make us millionaires if we could somehow bring them into being. Many of today's large software houses were built on a single product. It's a continuing trend — just thumb through this magazine, and you'll see plenty of new companies marketing only one product. These entrepreneurs could well be the Farallons, MacroMinds, or Passport Designs of tomorrow.

Even if you aren't a technical wizard, you need only two things to get started in this business: a great idea and the means to bring it about. If you've been blessed with a bulging bank account, you can live out your entrepreneurial fantasy by hiring a programmer. But before you do so, here are a few things to keep in mind.

#### **Creating the Specs**

First, you must ask yourself what problem your program solves. Whether an application formats a paragraph of text, calculates a formula, or sorts a list of names, it solves some basic problem. By defining the problem—and therefore the program's focus—you define its actions.

Your first design step, then, is to write a program description, which is a consolidation of all your ideas. It should describe what the program does, how it benefits users, and who will use the product, and it should provide a general idea of how they'll use it. The program description serves two main purposes. First, you can use it to orient your programmer to the program's technical goals. Second, you can use it as the basis of a business plan. For this reason, it should be free of implementation details and technical jargon.

The next step is to define what the program will look like. This is the functional-specification phase, in which you design the program's user interface. You're the expert in this phase — no one knows your product better than you do — so there's no point in hiring a high-priced programmer yet. Bear in mind, however, that your programmer will use the functional specification to implement the design, so it must contain detailed information about every aspect of the user interface.

Designing the interface is perhaps the most enjoyable part of software creation, but a word to the wise: Keep it simple. Your first task is to come up with a basic feature set that will support your concept, but don't build in too many bells and whistles the first time around. This approach gives you a better chance of actually getting your program *done*, which is no small feat.

If this is your first program design, there are a couple of books you should read. The Macintosh Human Interface Guidelines

#### POWER TOOLS POWER PROGRAMMING

(Reading, Massachusetts: Addison-Wesley, 1987) explains the proper use of the Macintosh's various user-interface tools. Another good and informative book is Apple's Programmer's Introduction to the Macintosh Family (Reading,

Massachusetts: Addison-Wesley, 1988), which outlines the implementation details involved in programming the Mac and is a good way to learn how to speak a programmer's language.

At this stage, you'll need a painting or

drawing program to create dialog boxes, menus, and windows. Or you can use a specialized program such as Bowers Development's AppMaker or Smethers-Barnes' Prototyper, which has these standard user-interface items built in. When designing Tycho Tablemaker, we used a combination of MacDraw, MacPaint, and Prototyper.

A good place to start your design is with the windows. Anything the user sees should be defined here. Does the application require multiple views? If so, all the application's windows should be defined in this specification. If there is printed output, then reports should be part of the functional spec.

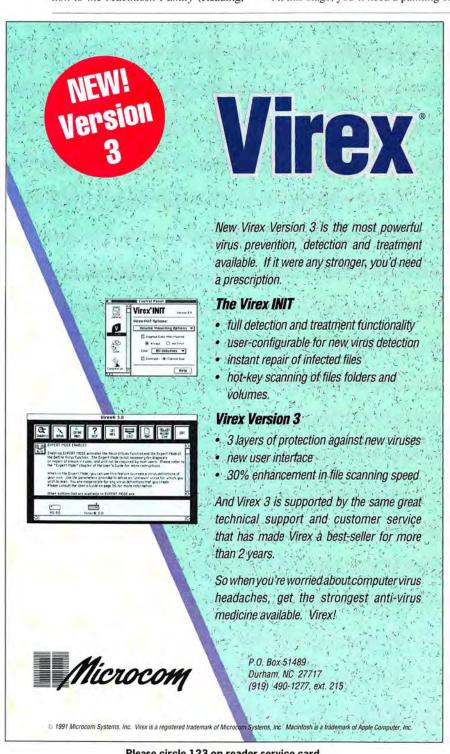
The next step is to develop a detailed description of the application's feature set. Taking a menu-by-menu approach helps you cover all the bases. Define each of the application's menus, the items for each menu, and any dialog boxes or other actions that occur as the result of a menu selection. Describe each action.

#### Where to Look

With the functional design finished, you're ready to find a programmer. Where do you start looking? Your best bet is to ask colleagues for recommendations. If you're the kind of person who wouldn't go to a doctor or hire a plumber without a recommendation, then it seems foolish to trust your future business success to an unknown quantity.

Another good option is to try your local Mac user group (which is where we met each other). Most user groups have a programming SIG (special-interest group). Go to a meeting, stand up and announce your needs (at an appropriate point!), and don't be surprised if you're the center of attention during the break. You can find your local user group by calling Apple's customer-service line at (800) 538-9696, ext. 500.

If the personal approach doesn't work, there are a number of professional membership organizations to try. The MCN (Macintosh Consultants Network) is an organization of programmers who specialize in Mac software development, databases, networking, and systems integration. This group is based in the Seattle area, but it has more than 100 members around the country. You can reach MCN at (206) 453-2729. Another group, the APX (Apple Professional Exchange), should have a consultants directory available by the time you read this. Contact APX at (408) 980-1957.



You can also find technical help through the classified section of your local computer tabloid. Many cities — such as St. Louis; Chicago; and Washington, D.C. — have local computer newspapers. The San Francisco Bay Area has two: Computer Currents — which also publishes in Southern California, Boston, Atlanta, and Texas — and MicroTimes. Many consultants advertise in these magazines; they're usually listed by specialty at the back.

#### **Cut Out the Middleman**

In some cities, you can use headhunters to find a programmer. Often called contract brokers, they specialize in knowing the local technical talent and their specialties. The better brokers understand the technical side of this market and can usually match you with a good programmer.

Finding your programmer in this way has major disadvantages, however. The three-way business arrangement among entrepreneur, contract broker, and programmer can create some unique problems - the size of the contract alone might scare you away. Most entrepreneurs hold contracts with the broker, who employs the programmer. The legal arrangements regarding who owns what technology can become horribly complicated. It also costs you more to hire a programmer through a broker: Instead of a one-time fee for finding the programmer, the broker may ask anything from 20 to 50 percent of the programmer's hourly rate. Because brokers receive a commission for the entire period the programmer works for you, their services can quickly become very costly. But perhaps the greatest disadvantage to using a broker is that having a middleman involved can get in the way of establishing a close, long-term relationship with your programmer.

OK, so you still haven't found a programmer. It's now time to place a classified ad in the help-wanted section of the Sunday paper. List your ad under Programmer (not Data Processor or Engineer), and run it for two or three consecutive weeks.

Where you place your ad is often more important than what you say. In our experience, programmers are creatures of habit and read only certain papers. For example, in the metro Denver area, where Kurt lives, most programmers check out the Denver Post or the Boulder Daily Camera, but they usually skip the Rocky Mountain News. Likewise, in the San Francisco Bay Area, Thom's home turf,

your best bet is the San Jose Mercury News, which covers Silicon Valley. If you're located in another area, look through the classified section of your Sunday papers and see where others are advertising for programmers.

Just remember: There are plenty of unemployed programmers out there. However you find the right one for you, *always* ask for references from former clients. And the best of luck with that great idea of yours.

# LabelWriter? What do I need a LabelWriter for?



Mix fonts, styles and graphics on the same label—like these actual-size samples.



How about address labels? Or videocassette labels? Or labels for disks, file folders, Rolodex® cards, name tags, bar codes, art boards? The uses are endless.

The palm-sized LabelWriter puts anything you can create with your Mac onto a 1"x 3½" label (130 per roll). Our exclusive print driver software lets you print directly from your database, word processor or any other application. In ver-

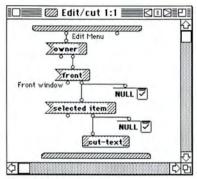
tical or horizontal format.

Suggested retail: \$249.95. For the dealer nearest you, call 1-800-4-COSTAR (in CT, 203-661-9700). Or write CoStar Corporation, 22 Bridge Street, Greenwich, Connecticut 06830 (fax 203-661-1540).

For information by fax, 24 hours a day, call 1-800-388-4888

1990 CoStar Corporation. CoStar and LabelWriter are trademarks of CoStar Corporation.

## Save Time... Program in Pictures



Prograph's pictorial object-oriented language and environment lets you build stand-alone applications without using any textual code, and create user interfaces as fast as you can draw them.

#### Prograph 2.0 provides:

- Graphic Editor/Interpreter
- Powerful OOP language
- WYSIWYG interface builder
- 680x0 Compiler
- Mac Toolbox support
- Importation of C code



WINNER

"...A revolutionary new way of programming..."

MacUser March 1990

"If your aim is to learn about programming, you can't afford to overlook it."

MacUser Sept. 1990

"...A great way to learn about objectoriented programming...indeed, a great way to program the Macintosh." MacTutor, March 1990

## prograph

Available through mail order or directly from TGS Systems for \$395 plus \$5 shipping.



2745 Dutch Village Rd., Suite 200 Halifax, Nova Scotia Canada B3L 4J9 Phone 902-455-4446 Fax 902 455-2246 U.S. Orders 1-800-565-1978

CIRCLE 316 ON READER SERVICE CARD



## POWER TOOLS TIP SHEET



Do you have an undocumented Macintosh tip you're willing to share? MacUser pays \$25 for every tip used, and the Tip of the Month earns \$100.

⊠ Send your tip, together with your name, address, and phone number, to Tip Sheet, c/o MacUser, 950 Tower Lane, 18th Floor, Foster City, CA 94404.

You can also contribute tips electronically via Zmac, the on-line service for MacUser. Send them to Gregory Wasson at 72511,36. Be sure to include your full name and mailing address along with the text of the tip.

Compiled by Gregory Wasson

#### **Control Panel**

If you use a Mac with more than one monitor, here is a way to select which monitor you want to use as the main one for the Welcome to Macintosh dialog box or a Startup screen. Choose Monitors from the Control Panel, and hold down the Option key. When the Happy Mac appears, drag it to your main monitor and reboot.

Chris Rendall Appleton, WI

#### **Adobe Type Reunion**

I like Suitcase II's ability to display fonts on the Font menu as they really appear. But after installing Adobe Type Reunion, I was disappointed to find that the feature apparently no longer worked.

To temporarily regain the feature within the application you're using, hold down the Shift and Option keys while selecting the Font menu. This key combination disables Adobe Type Reunion long enough for you to see what the fonts look like.

Larry Mendenhall Urbandale, IA

#### Adobe Illustrator 3.0

Certain characters in the Adobe Symbol font, such as  $\pi$  and  $\partial$ , are accessible within other Adobe fonts such as Helvetica but are not displayed on the keys (you can see what keys to use via the Key Caps DA). Although you can see these characters on-screen in Illustrator 3.0, some of them don't print, even if you import text containing these symbols. If you need these characters and can't — or don't want to — switch to the Adobe Symbol font (within which they will print), here's a simple workaround. First make sure you have Adobe Type Manager 2.0 installed. Then with the new

What you type in: HelveticaπΩΔ≥

What prints: Helvetica

What you see with Create Outlines: HelveticaπΩΔ≥

What prints: HelveticaπΩ∆≥

Figure 1: Illustrator 3.0's Create Outlines command lets you print characters that don't normally print.

Create Outlines command on Illustrator 3.0's Type menu, select the text and choose Create Outlines. By selecting Preview Selection from the View menu, you can see how the text will look when it is printed. The only drawback is that the characters may look slightly bolder when they're printed (see Figure 1).

P. Michael Hartman Franklin, PA

#### QuarkXPress 3.0

Here's a quick tip on importing Word 4.0 documents with style sheets into QuarkXPress. When you import text by using the Include Style Sheets option and the Word document's styles have the same names as those in the QuarkXPress document (for example, Body Text), the QuarkXPress styles should override the Word styles. However, this won't work consistently if you've saved your Word text with the default Fast Save option — only some formatting will take effect. To make sure the QuarkXPress styles do override all the Word

#### Tip of the Month

#### General

If you are using a single-floppy-drive-only system, the hassle of switching disks while a program launches or executes can drive you crazy. You can avoid this if the application you need to use is smaller than about 500K.

Because you don't need the Finder file for the Mac to run properly — it simply lets you launch other applications much more easily — you don't really need it on your startup disk. You do, however, need an application for the Mac to launch on startup, which you can provide by replacing the Finder file with the application you want to use. Here's how to do it:

- Place a copy of the System file on an empty floppy disk (you need to use only the Minimum System version).
- 2. Using Font/DA Mover, remove any unwanted or unnecessary fonts and DAs from the

System file. (Don't remove the Control Panel DA, however.)

- 3. Back in the Finder, copy the application you'll be using onto the floppy with the System file (make a System-file disk for each application you intend to use). Select the copied application by clicking on it once.
- 4. From the Special menu, select Set Startup. The dialog box should already display the application you've selected. Click on OK.

You're set! You can now restart your system from the floppy you've created, and your application will launch. Be sure to quit your application when you've finished. A dialog box will appear, telling you that the Finder is busy or damaged. Click on Restart in this dialog box; the disk will eject and your Mac will restart.

Kyle J. Smith St. Cloud, MN

## Chicago to Versailles. Nonstop.

Here's an open and shut case for taking the most direct route to your fonts and desk accessories. Get Suitcase II™ and store them in suitcase files, not in your system file. You'll speed up your moves and avoid stopping off at the Font/DA Mover.

Each suitcase can hold up to 500 font size and style variations, 52 DAs, or any number of FKEYs or beep sounds. And you can have up to 99 suitcase files open and accessed at once.

Suitcase II lets you store printer and screen fonts in the same folder, a great time saver, and a convenient way to share fonts on a network. You get unlimited access to DAs from your Apple menu or Suitcase II list. And you can even display the fonts in your font menu in their own typefaces.

You also get two important utilities: Font Harmony,™ which resolves font ID conflicts, and Font and Sound Valet,™ which compresses screen fonts and beep sounds by up to 60%, saving disk space.

#### Aachen

Alison

**Avant Garde** 

Baskerville

Berkeley

Bodoni

Bookman

Caledonia

#### √ Chicago

Fresh Script

**Futura** 

Galliard

Garamond

Helvetica

Italia

Janson

Kabel

Los Angeles

Lubalin Graph

Lucida

#### MACHINE

Monaco

New York

Optima

Palatino

Do 2-0 -

San Francisco

**Times** 

Trump

Univers

#### Versailles

Zapf Dingbats

Find out more about Suitcase II by calling 1-800-873-4384. Buy Suitcase II, and we'll give you two free fonts from SoftDisk Publishing—FreshScript™ and Alison,™ a \$59 value. Just write "fonts" on the registration card and return it to us.

This is a limited-time offer, so bag yours today.

Fifth Generation Systems, Inc. 10049 N. Reiger Road Baton Rouge, LA 70809 Technical Support: (504) 291-7283



Please circle 105 on reader service card.

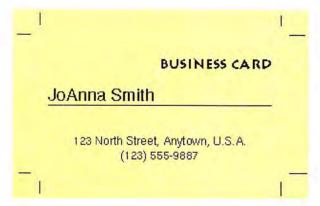


Figure 2: It's possible to create your own crop marks in QuarkXpress 3.0 when you can't use the automatic-crop-marks feature (above). Combining several grouped text objects with crop marks on one page can save money and time in imagesetter jobs (right).

styles, use the Save As command when saving your documents in Word. You can also use the Commands option from the Edit menu to add the Fast Save Enabled command to a menu. This lets you toggle Fast Save on or off as you need it.

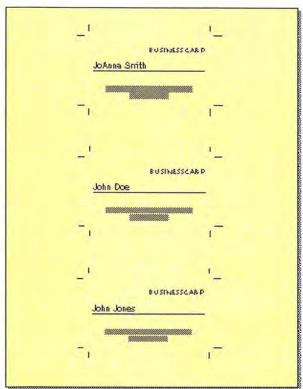
Elisabeth Nelson Greenville, SC

If you're outputting files at a service bureau that charges per page, you can consolidate space and reduce costs by combining several small jobs such as business cards onto a larger page. However, because you are putting several separate documents onto one page, you can't use QuarkXPress' automatic-crop-marks feature. Here is the best way I've found to quickly create accurate crop marks for each document on a page:

- 1. Draw a text box within a letter- or tabloid-sized page, and give it a white fill with no runaround.
- 2. Select the box, and make it the size of the document you want (for example, a 2-x-3 business card), using the Modify command from the Item menu or the Measurements palette.
- 3. Draw two lines with a 0.25-point line weight. One should be horizontal, butting the top of the box, and the other should be vertical, butting the left side of the box. Both lines

should extend about 1/4 to 1/2 inch beyond the box at both ends.

- **4.** Duplicate each line, and drag it to the opposite side.
- 5. Now drag the zero ruler guide to the top left corner of the text box, and drag the corner to resize the box so that it is 1/s inch larger than it was at the top and left. Drag the ruler guide to the bottom right corner, and extend the box likewise to the right and bottom. With the box still selected, bring it to the front, using the Item menu.
  - 6. Create a descriptive title



if necessary (for example, "My business card — shoot @ 100%"), and place it appropriately. Select all items, and group them. If you want to save this as a template for future use, drag a copy of it to a library.

7. Now drag the grouped item to an appropriate place on the page, and add any ruler guides as necessary. Continue adding other items to the page as desired (see Figure 2).

Perry Bessas Cliffside Park, NJ

#### DeBNDLer

If you keep a lot of font-outline files —also known as printer fonts — on your Mac to use with Adobe Type Manager, you may find that rebuilding your desktop or opening folders containing the printer fonts takes a very long time.

This is because the Finder keeps information about applications, their documents, and their icons in the Desktop file. Each application has a Bundle resource that lets the Finder know that it contains icon information (documents don't have Bundles because their icons are stored in the application). For example, Microsoft Word has a Bundle that tells the Finder about the application's icon as well as about the icons for all Word documents. To guarantee that every printer font has an icon, Adobe ships

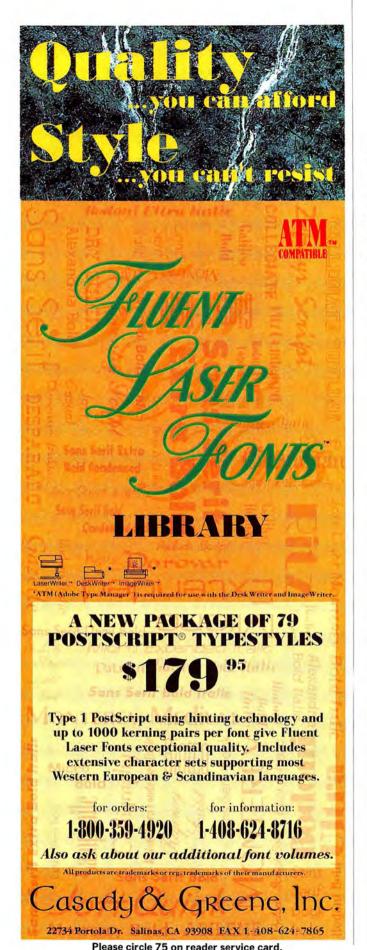
each one with a Bundle. So if you have 20 outline files on your disk and you rebuild your desktop, the Finder will find 20 instances of the same information. If you have a lot of printer fonts and you use Apple's Desktop Manager INIT (part of the AppleShare server software) or System 7.0 (which has the Desktop Manager built in), it can take a long time to open folders containing printer fonts or rebuild the desktop.

To solve this problem, I've written a small application named DeBNDLer. DeBNDLer scans either the active System Folder or the volume where DeBNDLer resides, depending on which radio button you choose — Process Current System Folder or Process This

Drive. DeBNDLer then removes the Bundle information from the files and changes the creator to DeBNDLer. Because all printer fonts are now treated by the Finder as DeBNDLer documents, rebuilding the desktop is much faster. DeBNDLer does not affect either ATM or Adobe's Font Downloader.

Stephan Somogyi MacUser Project Leader

[DeBNDLer is freeware. You can download it from Zmac's Applications Library (Lib 1) in the Download Forum (GO ZMC:DOWNLOAD), filename DeBNDL.SIT. Zmac is available on the CompuServe network. If you're not a member of CompuServe, look elsewhere in this issue for information on joining. — Ed.]



POWER TOOLS
TIP SHEET

QuarkXPress 3.0 can provide you with useful information about your system configuration in its Environment dialog box. You access it by holding down the Option key when you choose About QuarkXPress from the Apple menu. But if you use QuicKeys 2 or Suitcase II, you can run into problems, because those

programs use the Option key to modify menus. Quark suggests that you change this menu-modifier key, but if you have an Apple Extended Keyboard, you don't have to. Hold down the Option and Help keys, and the Quark XPress Environment dialog box is all yours.

Jay Jemison Birmingham, AL

#### **Tips from the Experts**

#### **Adobe Photoshop**

Here are some handy Adobe Photoshop tricks from the magicians at Adobe:

Beyond Masking: Photoshop's painting tools affect only the selected portion of a graphic, and it can be difficult to protect (or mask) an awkwardly shaped object or one that's in the middle of an image you want to work on. A special kind of mask called a frisket lets you select the area you want to protect rather than the area you want to alter; it also keeps your document size smaller than it would be if you created masks in the usual way.

To create a frisket, select the part of the graphic you want to shield and then choose the Inverse command from the Select menu. The area you've selected is now protected (see Figure A).

Magic-Wand Magic: The

magic-wand tool sometimes fails to make the desired selection when it's faced with an intricately shaped object, but you can get around this. If the object rests on a simple background, use one of the selection tools to choose the object and some of the background. Then remove the background from the selection by clicking on it with the magic wand while pressing the Command key.

Two Windows Are Better Than One: As with Illustrator 3.0, you'll probably find it productive and helpful to open two Photoshop windows or views on the current graphic. Set one to display your file at its actual size and the other with a zoomed view. This can make working with small graphics or small details of larger graphics easier, and you can still see the graphic as it will appear in its finished size.



Figure A: A frisket, or inverse selection, protected the yellow flower from the effects of Photoshop's painting tools.



## Complete Ready-to-Run Macintosh Systems

#### Macintosh IIci Power System

- Macintosh IIci w/built-in Video Card. Apple SuperDrive, 4 Mbs of RAM
- Microtech Nova 105 Mb Internal Hard Drive w/5 Year Warranty
- Magnavox 14" Color RGB Monitor
- MacPro Plus Keyboard w/Tempo II
- HyperCard & MultiFinder
- Virex Anti-virus Software
- Adobe Type Manager Software
- · Norton Utilities, Total Recall, World Map Plus! Demos of Excel & 4th Dimension
- 6 Outlet Surge Protector
- Mouse Pad
- 10 High Density 3.5" Diskettes
- Diskette Storage Case

Ask for Package #9107 CDA \$5,869 or \$134.61/mo.\*\* \*\*Based on 60 month FMV lease

#### Macintosh LC 40Mb System

- · Macintosh LC w/Apple 40Mb HD, Apple SuperDrive, 2 Mbs of RAM, Microphone, Keyboard and Mouse
- Apple 12" Color Monitor
- · HyperCard and MultiFinder
- Virex Anti-virus Software
- Adobe Type Manager
- 10 High Density 3.5" Diskettes
- · Diskette Storage Case Ask for Package #9150 CDA \$2,569 or \$67.44/month\*\*

**DataLink LC by Applied Engineering** The DataLink LC is a Hayes-compatible internal 2400 bps modem with send fax designed exclusively for the Macintosh LC. It saves desktop space without occupying one of the LC's two serial ports. Software included .....\$239

#### When you purchase your Mac from CDA you'll receive:

- Knowledgeable Sales Assistance
- Top Quality Components
- · All Systems are Upgraded, Tested & Preformatted Before Shipping
- Unlimited Technical Support
- 30 Day Money Back Guarantee
- 1 Year Performance Guarantee

#### Macintosh Ilsi 100Mb System

- · Mac IIsi w/Microtech 100Mb HD, SuperDrive, 2 Mbs RAM, Microphone
- MacPro Plus Keyboard w/Tempo II
- Magnavox 14" Color RGB Monitor
- · HyperCard and MultiFinder
- Virex Anti-virus Software
- Adobe Type Manager
- Norton Utilities, Total Recall, World Map Plus! Demos of Excel & 4th Dimension
- 6 Outlet Surge Protector
- Mouse Pad
- 10 High Density 3.5" Diskettes
- · Diskette Storage Case

Ask for Package #9113

CDA \$3,899 or \$92.48/month\*\*

Memory Ungrades

2 Megabyte Upgrade (Plus/SE)	\$13
4 Megabyte Upgrade (SE/30/Mac II)	\$25
4 Megabyte Upgrade (IIfx)	\$25
16 Megabyte Upgrade (68030)	
1 Megabyte Upgrade (Mac Classic)	\$10
3 Megabyte Upgrade (Mac Classic)	\$16

#### Macintosh Classic 40Mb System

- · Macintosh Classic w/Apple SuperDrive, Keyboard, Mouse, & 4 Mbs of RAM
- Apple 40 Mb Internal Hard Drive
- HyperCard and MultiFinder
- · Virex Anti-virus Software
- Adobe Type Manager
- 6 Outlet Surge Protector 10 High Density 3.5" Diskettes
- Diskette Storage Case
- Mouse Pad

Ask for Package #9105 CDA \$1,599 or \$45.26/month\*\* Macintosh Classic system above with: 100 Mb Hard Drive ......\$1,799



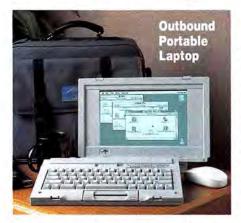
Ad# 36-05

US/Canada 800-526-5313



NJ/Outside US 908-832-9004

## For Complete Macintosh Solutions



Outbound w/o ROM, 40Mb HD, 2Mbs RAM (use your Plus, SE, or Classic's ROM) ........... Call Outbound/Classic Bundle w/40Mb HD, 2Mbs RAM, and the Macintosh Classic CPU ............ Call

#### **Macintosh Portable**

New! Mac Portable w/2 Mb & 40Mb HD.	\$3399
AE DataLink MacPortable w/Send Fax	\$199
1 Mb Upgrade	
2 Mb Upgrade	\$689
3 Mb Upgrade	\$899

#### **DoveFax Modems**

The DoveFax Desktop and the DoveFax+ combine a 9600 baud fax modem and 2400



DoreFax:

With the DoveFax+, your Mac turns into a personal voice messaging system, as well as a full featured fax machine. DoveFax+ .\$395

#### Modems

ill du cilio	
Abaton Interfax 24/96 w/cable	\$369
AE DataLink Express 2400 External	\$169
AE DataLink Express w/MNP-5 External	\$199
AE DataLink Mac 2400 Internal (Mac II)	\$199
AE DataLink LC	\$239
Zoom 2400 Baud w/cable & software	\$129
Zoom V.42 bis w/cable & software	\$199
MacModem 9600/38.400 Baud	\$689

#### **New! MacPro Plus**



No matter which Mac you use, old or new, the MacPro Plus keyboard gives you the ability to get you through your work faster and easier. The 105-key layout is similar to the Apple Extended Keyboard, but with more features. Also included is a free offer for Tempo II Software (\$149.95 value) ...... \$139

#### Input / Output Devices

New! Key Tronics MacPro Plus Exten	ided Keybd
w/Tempo II Software (\$99 Value) .	
Kensington Turbo Mouse ADB	
Wacom Graphics Tablets	Please call
Kurta Tablet (8 1/2" x 11")	\$359
Kensington Turbo Mouse ADB	
Altra Felix Mouse ADB	\$119

#### Scanners

- Countries
DEST Scan 3000 (256 Level gray scale) \$1159
Recognize OCR Software (uses only 1Mb) \$469
Logitech ScanMan Model 32\$319
Microtek MS-II w/Omnitype OCR\$839
Microtek MSF 300GS w/SCSI\$1339
Microtek MSF 300ZS w/PhotoShop \$1895
Transparency/Slide Upgrade (XRS 3C) \$1799
Sharp JX-600\$11,999



The DEST Personal Scan makes OCR scanning a breeze. This is the first scanner to combine fullpage, one pass, hand-held scanning with ten-page capacity sheetfed scanning. Included is a free copy of Recognize! OCR software which uses only 1 Mb of memory (\$500 value) ......\$689

#### Connectivity

A STATE OF THE STA
Asante FriendlyNET LC\$269
Farallon PhoneNET StarController 300 \$859
Farallon PhoneNET StarController EN \$1599
Farallon PhoneNET Connector (DIN-8)\$29
Farallon PhoneNET Repeater\$315
Farallon Timbuktu 3.1\$95
Farallon Timbuktu/Remote 2.0\$123
Dayna Dos Mounter 2.0\$52
DaynaTalk PC\$219
DaynaTalk Micro Channel\$289
DaynaTalk Speed Guard Collision Filter \$52

#### **EtherNet Products from Dayna**



EtherPrint is an easy to use, easy to afford way to connect your Ethernet network to any LocalTalk compatible printer. ..... \$349 DaynaPORT network interface cards let you connect your Mac to thick and thin twisted pair cable Ethernet based AppleTalk network systems. With the DaynaPORT cards, your Mac can share Ethernet system resources such as printer, modems, electronic mail, file servers and file transfering with other network hosts. DaynaPORT E/30, E/SE, or E/II ......\$289



Mega Graphics Rival 19" Monochrome

MacWorld Magazine rated the Rival the top performing WYSIWYG big screen - outranking dual-page displays costing much more.

Rival 19" Monochrome w/video card ....... \$1169 Rival 19" Gray Scale (Mac II) w/video card \$1749 Rival 19" Gray Scale (SE/30) w/video card \$1789

#### Monitors & Video Cards

Apple High Resolution 13" RGB\$799
E-Machines ColorPg T-16 w/video card \$2149
E-Machines TXsi\$3089
Ikegami CT20 20" Trintron w/8-bit card \$2799
Magnavox Mac Color 14" RGB\$459
Micron 8-bit Video Card (Mac II, SE/30) \$349
NEC MacSync 14" Color HC\$499
Radius Pivot IIsi/IIci\$1199
RasterOps 8LC System\$2759
RasterOps ColorBoard 24S (Mac II)\$589
RasterOps ColorBoard 364 (Mac II)\$949



#### Sigma Designs L\*View Multi-Mode

Now you can truly zoom in and out of your work. Zoom out to see 70% more of your job on screen. Zoom in to see a 200% close-up. No matter which software program you're working in you have the power to see your work in 6 sizes and resolutions. (for SE/30, Mac II) Sigma L\*View MultiMode 19" ...... \$1379 Sigma PageView GS (IIci/IIsi) ......\$619

Printers	
New! Apple StyleWriter Printer	Call
Apple ImageWriter II w/cable\$	459
Apple Personal LaserWriter NT	Call
Apple LaserWriter HNT	Call
Apple LaserWriter HNTX	Call
CoStar LabelWriter\$	179
Epson EPL-7500 Laser Printer\$2	399
HP DeskWriter w/cable\$	759
Kodak Diconix M150 + w/ATM & cable \$	419
LaserMax 400\$2	039
Microtek TrueImage Laser Printer\$2	149
NEC SilentWriter 2 Model 90 w/cable \$1	799
TI microLaser PS 35 w/AppleTalk\$1	
QMS PS-810 w/cable & toner\$2	995
QMS PS-410 w/cable & toner\$2	199

## Call 1-800-526-5313



The DayStar PowerCache IIci Card will accelerate your Hci to Hfx speeds and beyond. It installs easily into your cache card connector slot. If you already have a cache card, CDA offers a trade-in policy up to \$1,000. Pricing below reflects net price after maximum rebate. PowerCache IIci 40 MHz .....\$799 PowerCache IIci 50 MHz .....\$1089

#### Accelerators

DayStar Accelerators for Mac II Family
DayStar Fast Cache IIci\$279
PowerCard 030 40 MHz (II,IIx, IIcx) \$1399
above w/68882 processor\$1599
PowerCard 030 50 MHz (II,IIx, IIcx) \$1899
above w/68882 processor\$2189
SCSI PowerCard 1Mb (expand. to 16Mb) \$1175
RAM PowerCard 8Mb (expand. to 64Mb) \$1149

Total Systems for the Mac Plus, 512, SE Gemini 030 Accelerator 20 MHz (Mac SE) ... \$819 Gemini 030 Accelerator 25 MHz (Mac SE) . \$1179 Gemini 030 Accelerator 33 MHz (Mac SE) . \$1379 Gemini 030 Accelerator 40 MHz (Mac SE) . \$1509 Gemini Plus Kit for Mac 128, 512, & Plus ..... \$125

Micron Image Compression Card for Mac II Xceed ICDP-II Picture Press Accelerator ..... \$659

#### **Microtech Hard Drives**

All Nova series hard drives include the following:

- · Five Year Warranty
- · Norton Utilities, Total Recall & other utilities including World Map, Close View, MacroMaker
- · Demos of Microsoft Excel, 4th Dimension by Acius, Opcode's Vision & Cue and more!

Microtech Nova 40 Mb Internal	\$399
Microtech Nova 105 Mb Internal	\$569
Microtech Nova 105 Mb External	\$699
Microtech Nova 120 Mb Internal	\$819
Microtech Nova 170 Mb Internal	\$999
Microtech Nova 200 Mb Internal	\$1089
Microtech Nova 320 Mb Internal	\$1299
Microtech Nova 400 Mb Internal	\$1569
Microtech Nova 650 Mb Internal	\$2229
Microtech Nova 1000 Mb Internal	\$3199
Microtech Europa 40 Mb External	\$369
Microtech Europa 80 Mb External	\$599
Microtech Europa 100 Mb External	\$729
Europa 20 Mb Internal w/3 Mbs RAM	\$479
Europa 50 Mb Internal w/3 Mbs RAM	\$579
Europa 100 Mb Internal w/3 Mbs RAM	\$809

#### Removeable Cartridge Drives

PLI Infinity Turbo	\$699
Mass Micro Systems	
DataPak (SE footprint)	\$729
DataPak Duet	1489
DataPak II (Mac II, IIx, IIfx footprint)	\$859
DataPak II Duet	\$1499
DataPak Hex (Mac Hex./ci footprint)	\$799

#### Music / MIDI Hardware & Software

Band-in-the-Box w/MIDI Fake Book \$5	9
Coda Finale V2.5 (professional notation) \$54	9
Music Prose V2.0 (notation)\$29	19
Mark of the Unicorn Performer V3.6 \$36	5
MIDI Time Piece (interface)\$36	
Performer/MIDI Time Piece Bundle \$71	9
Passport Designs	
MasterTracks Pro 4 (pro. sequencer) \$29	19
MasterTracks Pro V3.02\$21	9
Encore V2.3 (music notation)\$36	5
Sound Exciter (Macintosh synthesizer) \$4	9
Trax (entry level sequencer)\$5	9
Pyware MusicWriter Limited\$8	
SoundQuest	
MIDIQuest (universal Editor/Librarian) \$15	9
Opcode	
Vision V1.1 (professional sequencer) \$33	9
Studio III (professional MIDI Interface) \$26	9
Professional Plus MIDI Interface \$5	9
Full line of Editor/Librarians Please ca	1
EMU Proteus Editor/Librarian\$13	9
Galaxy - The Universal Librarian\$16	9



With EZ Vision, a MIDI insturment, and the MIDI Translator, you can create and edit your own musical composition. You don't have to be an experienced musician to use EZ Vision - it was designed for educators, and entry level musicians. EZ Vision by Opcode Systems ......\$99 MIDI Translator by Opcode Systems ......\$49



Digidesign's Desktop Music Studio a powerful integration of MIDI and multitrack digital audio to produce a complete digital music workstation on the Mac II. Orchestrate an entire tune with MacProteus. Add vocals and acustic instruments by recording directly to hard disk with DECK and Audiomedia. MIDI and CD-quality digital audio all on the Mac-

Mac Proteus, the NuBus card based on E-MU Systems' top selling digital sound module. Put the same world class sounds in your Mac. \$679 Audiomedia ......\$799 DECK Software ......\$299



- Over 2,000 Macintosh Software Titles Available
- We Stock all Adobe Fonts
- Free Freight on Software Orders over \$100\*

#### NEW!

#### Type On Call from Adobe

Now you can get the entire Adobe Type Library on a Macintosh formatted CD-

ROM. The fonts arrive locked; you can "unlock" as many as you wish to instantly obtain your new typeface. Simply call CDA to purchase and receive the access code necessary. Initial purchase includes the CD-ROM disc, Adobe Type Manager (including the base 13 fonts), bitmaps to all of the fonts included on the disc, and access to 2 typeface packages to be selected from a list of eight. Or purchase all eight and save over \$200! Type On Call w/two fonts ......\$59 Type On Call w/eight fonts .....\$229

FREE!

Get Type On Call free when you purchase a CD-Rom Porta-Drive



by CD Technologies ......\$649

#### The Freight's On Us!



\*CDA will ship your order free via Federal Express® Economy Two Day Service.

This applies to stock items under 15 lbs. and orders over \$100 shipping within the contiguous United States. AK, HI, PR, Canada, & international orders, please call for rates.

#### Order via CompuServe!

- · GO CDA on CompuServe's Electronic Mall 24 hours a day & watch for weekly specials!
- · Hours: Mon-Fri 8am-10pm; Sat. 9am-6pm
- Customer Service: 800-526-5314 9am-5pm
- Order via Fax: (908) 832-9740
- CODs up to \$1000 accepted (\$4 charge). 1 CDA Plaza, Box 533, Califon, NJ 07830

Call or Write for CDA's latest Mac catalog featuring complete systems bardware, software & accessories.

Ad# 36-05

The Magic of Mac, The Power of People NJ/Outside US 908-832-9004

US/Canada 800-526-5313

## And you thought page layout was for somethis alse.

"I want my documents to look good, but page layout is complicated and hard to learn. I just can't spend the time or money...."

If this sounds familiar, Personal Press™ is for you. In addition to giving you everything you need for quality desktop publishing, Personal Press can automate the process so great-looking documents don't take hours to produce.

Let AutoCreate automatically assemble your stories and graphics with a template. Use one of the templates provided, or create your own – any publication can be saved as a template. Or you can design a document, enter the text "on the fly," and scan images directly into the program. Either way, you'll find Personal Press easy to use, with plenty of features and power to grow into.

Personal Press – for people who thought desktop publishing was for someone else!

#### FEATURING:

- AutoCreate™
- Complete word processing, with thesaurus & spell checker
- Text and graphic file previews
- Free rotation of text and graphics
- Color graphic import and display
- Gray-scale image manipulation
- Spot color separations
- Electronic Posted Notes
- On-line help





CHARLES BERNERS





9770 CARROLL CENTER RD., SUITE J • SAN DIEGO, CA 92126 • (619) 695-6956

Please circle 167 on reader service card.

#### Now Shipping!

Suggested Retail Price:

Requires a Macintosh Classic, Plus, SE, SE/30,LC, Portable, or II series, with I MB RAM and two 800K floppy drives, or a hard disk and one 800K floppy drive.

## POWER TOOLS HELP FOLDER



Questions, anyone? Here's where to get answers from the experts. Bob LeVitus is the author of the best-selling Dr. Macintosh. Andy Ihnatko isn't. But he knows a lot about the Mac, and he's got a heck of an attitude. Together, they're ready to answer your questions about everything Macintosh.

₩ Write to Help Folder, c/o MacUser, 950 Tower Lane, 18th Floor, Foster City, CA 94404.

Don't want to wait for an answer? Post your question on Zmac, MacUser's on-line service, and get a reply from Bob, Andy, or one of the other MacUser experts. See the masthead in this issue for instructions on how to sign up.

#### By Bob LeVitus and Andy Ihnatko

#### **Hiding Files**

**Q.** Are there any programs for the Mac that can "hide" the existence of a file so that it doesn't appear in the directory window but also can't be overwritten?

Frederick Wein Plainsboro, NJ

Bob: Any program that allows you to edit a file's attributes (such as CE Software's DiskTop, Apple Computer's ResEdit, or Symantec's SUM II) can do what you ask. All you have to do is turn on the Locked and Invisible attributes (see Figure 1). To use the file, just reverse the process — use the same program to turn the Locked and Invisible attributes off.

#### 68040 Upgrades?

Q. I am a dedicated Mac user and own an SE/30 that I use for everything, including a lot of processor-intensive applications. I want to upgrade, but I also want to wait and get a really first-rate upgrade. Are there any companies that are planning to offer a 68040 (25-megahertz) upgrade for an SE/30?

By the way, I am a high-school student

working on extremely complicated designs for a mechanical/robotic arm. I need some expensive hardware, but I don't have any money. Any ideas for getting either the money or the hardware?

Nate Sammons

Via CompuServe

Bob: I haven't heard of any 68040 upgrades for the SE/30. But remember, I'm writing in January. I'm willing to bet that more than one third-party 68040 upgrade for the SE/30 will be introduced in 1991. As long as I'm gazing into my crystal ball, I also predict that Apple will introduce one or more new 68040 models sometime this year. An Apple-branded 68040 upgrade for the SE/30 is also a possibility.

As far as inexpensive "expensive" hardware goes, there are a couple of ways a savvy Mac user can save a few bucks on high-powered hardware. First, non-Apple peripherals and upgrades are almost always less expensive than their Apple-labeled counterparts. So if you're looking for a big hard disk or monitor, consider vendors other than Apple.

Another thing to consider is buying used equipment. Used computers and peripherals

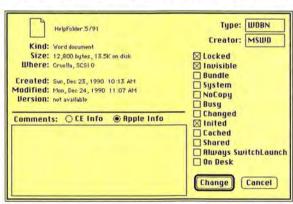


Figure 1: Any program that can edit file attributes (DiskTop in this picture) lets you "hide" files in the directory by turning on their Locked and Invisible attributes.

#### \* . . . But Were Afraid to Ask

Who ever said there was such a thing as a stupid question? OK, my chem professor did, but he said it only to me. The only stupid question is the question you don't ask. Here at Help Folder, we don't care how simple you think your question is ... just send it in! (If it's such a simple question that you're embarrassed even to ask it, we'll conceal your identity by crediting the question to an additive in a well-known diet soft drink.)

Q. Can you help out a neophyte Mac user? Let me start out by saying that I shouldn't have let my nine-year-old son play with my Mac. It's been working fine, but my Apple menu has started flashing on and off, on and off, on and off. It was kind of fun at first, but now it's really getting on my nerves. How do I turn it off?

Potassium Benzoate

Atlanta, GA

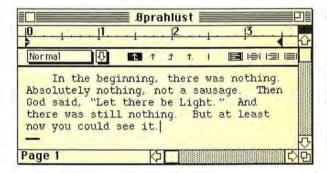
Andy: First off, I'd like to address the thousands of MacUser readers out there who are at this moment moaning, "Not that question again! When are they going to talk about VDAC allocation exceptions in the IIci?" Now hush. People have been dumbfounded by the flashing Apple menu every day since 1984; it's a perfectly valid question.

So, Potassium, that flashing is just the Alarm Clock DA's way of telling you that an alarm has gone off. Open up the Alarm Clock DA (which you'll find on the Apple menu) and turn off the alarm, and your problem should be solved. A mere bag of shells, as Ed Norton would say.

By the way, I'm impressed with your nineyear-old. Give him a soldering iron and a copy of MacApp for his birthday this year, and maybe by the time he's 18, you'll be able to live off his money!



Figure 2: If you need someone to tell you to take a break from your Mac, LifeGuard from Visionary Software will nag you in a variety of ways, plus give you suggestions for noncomputing activities and exercises.



In the beginning, there was nothing. Absolutely nothing, not a sausage. Then God said, "Let there be Light." And there was still nothing. But at least now you could see it.

Figure 3: Here's what you see on-screen (top), and here's what you get when you use the ImageWriter driver to print to a daisywheel device (bottom). If you can live with the erratic spacing, you'll save about \$80.

can be excellent values. Your local newspaper's classified section is a good place to start. Also, several vendors advertise used and refurbished equipment in *MacUser's* Market-place section.

Andy: You can also try writing to the companies that make the hardware you're interested in and explain your situation. Some companies actually loan — or sometimes even donate — old equipment they have lying around the office. It's certainly worth a stamp to find out!

#### Eye and Body Saver?

Q. I've seen many screen savers but I've never heard of an eye saver. Is there an INIT that could turn my monitor off every hour for five minutes or so and let me focus on something away from my computer?

Louis Veillette

Via Zmac

Bob: Good question, Louis. But it's more than just your eyes — your whole body is at risk. The National Academy of Sciences reports that more than half of all video-display and microcomputer users polled complained of eyestrain, headaches, and muscle pain, and BusinessWeek reports that RSI (repetitive-strain injury) is the fastest-growing occupational disease of the 1990s.

The best way to protect yourself is to take a break every so often and do something else. I know I should do this, but I forget more often than not, which is why I'm so impressed with a software product called LifeGuard.

LifeGuard is an INIT and DA from Visionary Software that interrupts your work at customizable intervals - with an audible or visual notification - and reminds you to do something else (see Figure 2). It also keeps track of the number of keystrokes you've made in the past hour (according to the manual, experts recommend you keep your keystrokes to fewer than 12,000 per hour). The DA includes illustrated exercises for the eyes, neck, shoulders, back, arms, wrists, hands, and legs, plus ergonomic reference diagrams to help you create a workstation that won't cause you pain.

Andy: Another solution is to keep a TV set on in the next room or better yet a small child. I guarantee you won't get more than ten minutes' work done at any one stretch.

#### **Daisywheel and Deal**

an Apple II Plus to a Mac II. I love the more powerful word processors but hate the Mac's dot-matrix printers. Is there a way I can hook up my old daisywheel printer to my Mac II and still get that letter-quality output?

Martin Asdorian, Jr. Bedford, TX

Andy: Piece of cake, Martin — you just have two humongous problems to deal with before you can get started. Problem I is that only a printer with a serial interface can be connected to the Mac. (Interface here just means the way the printer's hardware talks to

the computer's hardware, and there are two kinds: parallel, which is incredibly, amazingly fast, and serial, which is only amazingly fast.) If your old printer is serial, then you need a Mac II-to-ImageWriter I printer cable. If it's parallel, you'll have to find a way to convert the signal. There are a bunch of parallel-to-serial converters on the market, selling for anything from \$50 to \$150. Depending on how you set it up, the converter will either translate serial to parallel or (if you're using a dotmatrix printer) it'll translate the ImageWriter-type printer codes into your printer's codes.

Problem 2 is persuading the Mac that it's not hooked up to an ImageWriter or Laser-Writer. See, one of the Mac's high-scoring concepts is that each Mac program doesn't have to know how to deal with several different printers. As long as the program plays by the rules, it can print on any printer whatsoever, assuming there's a driver for that printer in the System Folder (the driver describes the printer, its features, and how it operates). That's the good news. The bad news is that the only drivers Apple gives away (or even officially supports) are the drivers for its own printers, which are ImageWriters and LaserWriters.

Fortunately, drivers for non-Apple printers are available from lots of non-Apple companies, notably GDT Softworks. Its MacDaisy Link (about \$80) is a set of drivers designed for use with more or less generic daisywheel printers and should serve your needs just fine.

I have to tell you, however, that you can get by pretty well if you use the plain old ImageWriter driver — if you don't mind some inconsistencies in spacing. When set to Draft mode, the ImageWriter driver sends raw ASCII text through the serial port, spacing the letters to approximate

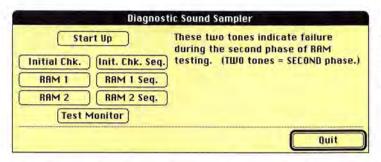


Figure 4: Name That Crash: Diagnostic Sound Sampler explains your Mac's error tones.

what's on-screen (see Figure 3). The letters are printed in whatever character face is built in to your printer. For best results, use a monospaced font (such as Monaco or Courier) at the same size as your printer's typewheel (typically 10 or 12 points), and keep the fancy formatting to a minimum. It's a bit of a trade-off; an additional space may be added here and there (although on my printer it's hardly noticeable), but you're saving yourself \$80.

The last cheapo solution is to do your word processing with a program that — like your old Apple II — deals only with plain ASCII text to begin with, such as the shareware DAs MiniWriter and McSink.

#### Managing User Access

**Q.** In one of our labs, we have ten Mac IIcx's. We need a software package that allows the students to access installed applications, DAs, and fonts; copies their files to and from the hard disk via the floppy-disk drive; and prints their files. But we want to prevent them from accessing the Control Panel; initializing the hard-disk drive; accessing Set Startup; or copying applications, DAs, or fonts to and from the hard disk via the floppy-disk drive.

The perfect software package would let teachers access the Control Panel and regain full access to all aspects of the Mac by using a password. Does such software exist?

Guy Dalbec Ottawa, Ontario Canada Bob: A.M.E. from Casady

& Greene is the only product I know of that can do everything you ask. Unfortunately, my experience with A.M.E. was mixed. Although it is easily the most powerful security product I've seen, the version I used, 1.1.3, rendered one of my harddisk drives temporarily inaccessible, requiring me to send the drive to Casady & Greene for repair. (For what it's worth, Casady & Greene's tech support was excellent and the hard disk was returned within 48 hours with all its data intact.) In A.M.E.'s defense, there have been several bug-fix releases since then, and apparently the problem I experienced has been isolated and fixed in later versions (the current shipping version is 1.1.7, and Casady & Greene say version 2.0 may be out by press time).

My advice: Give A.M.E. a try, but be sure you're religious about maintaining backups in case anything should go wrong.

Andy: Ilike ASD Software's FileGuard myself. It doesn't restrict access to the Control Panel, but it does allow you to set different access levels to folders, does, and applications.

#### The Dreaded Error Tones

Q. Drat! My Mac SE/30 gives me an error tone when I boot up first thing in the morning — not every day but often enough to cause concern. When I boot up the computer, the error tone sounds like "babaa bum" and the screen turns into a series of alternating horizontal black and white lines. My local dealer said it might

be due to the moisture in my garage office; another technician said that it's probably damage to the motherboard or RAM and asked if I had done a memory upgrade recently. He said that the damage was probably static-related. I was pretty surprised by this, because I wore an antistatic wrist strap when I did the upgrade. The people from whom I bought the chips told me that static damage was rare and that they don't wear wrist straps even when they're working on their own machines. Is it possible that I did serious static damage to my Mac even while wearing a strap? If so, shouldn't you and mail-order RAM suppliers be more careful in warning people who install RAM themselves about the dangers? Also, why don't I get the error tones consistently? Help!

Dick J. Godbey Columbia Falls, MT

Andy: Your letter brings up a whole basket of different topics, requiring me to separate them into different acts, just like an episode of "The Streets of San Francisco."

Act 1: The Error Tone. The Mac has a cryptic system of error ID codes, which is supplemented by a system of cryptic error tones. If there's a hardware problem, on startup you'll hear the specific tone that tells you it's time to send Apple some more money. Your "ba-baa bum" sounds like the beloved "Stage 2 RAM error." This means that your RAM is acting somewhat - but not terminally - screwy, which is consistent with an intermittent RAM problem.

To learn more about the Mac's error tones, the Library of Congress recommends Diagnostic Sound Sampler, a program that plays all the tones and explains what they mean (see Figure 4). You should be able to get a copy of this program from a user group such as BMUG (Berkeley Macintosh Users Group).

Act2: Static Electricity. For the rest of the world, static electricity is what makes a balloon stick to the wall after you rub it on your head, but to computer jocks, it's a force of evil that zaps and destroys electronic components, especially RAM chips. Let there be no doubt that if you shuffle your feet across a carpeted floor on a dry winter day and then touch a SIMM, you'll probably fry the memory.

You need to take some precautions whenever you perform open-Mac surgery. A wrist strap (a band on your wrist that's wired to an electrical ground) is the usual antistatic weapon; any charge you build up passes harmlessly to ground instead of through your Mac. However, due to hairy wrists or a bad strap, sometimes these straps don't work. Personally, I just make a point of touching something big and metal (such as my steel work table or a wall plate) before opening the case. This is a sure way of liberating those pentup electrons.

Act 3: What Happened to Your Mac. I dunno, but something's definitely wrong with your memory, and static electricity is usually a good scapegoat for that kind of problem. The fact that it's a sporadic problem makes me suspicious - when a SIMM is killed by static electricity, it usually stays killed. The sporadic nature of the problem could be due to the moisture in your garage. In a certain range of meteorological situations, electrons can't reliably make their trip from the motherboard into the SIMM module.

#### POWER TOOLS HELP FOLDER

Move the Mac into the house for a while or install a dehumidifier in your garage, and see if the problem goes away by itself. If not, then maybe the SIMM contacts have become dirty from dust and/or moisture. Get some TV tuner cleaner and clean all your SIMM's contacts (those silvery pads at the bottom of the SIMM) with a cotton swab. If you're adventurous, clean the sockets on the motherboard too; I do it by spraying cleaner on a strip of thin cloth, wrapping the cloth around the SIMM, and then inserting the SIMM into the slot a few times. (Cover-My-Rear-End Department: Remove the cloth before starting up your Mac!)

Another simple procedure is to swap suspect components for ones you know to be good. You could try replacing the new 1-megabyte SIMMs with your old 256K ones (you did save them, didn't you?), or if you have access to a friend's (or better yet, an enemy's) Mac, install your current SIMM set into another machine. If your Mac springs back to life or if the other Mac bites the clay Eskimo, then you know you have defective SIMMs.

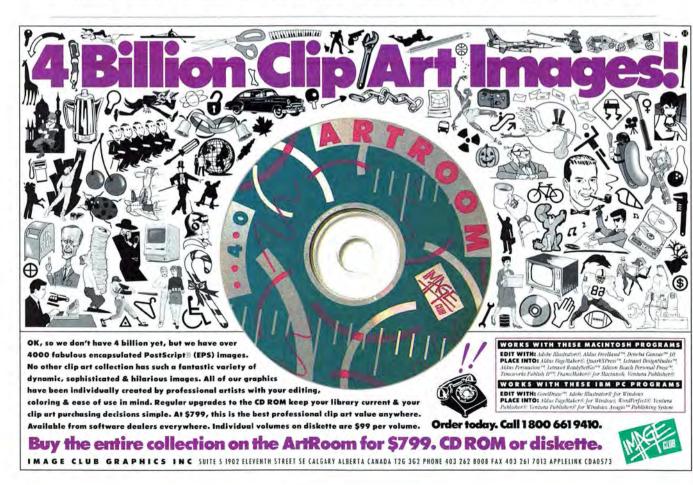
Epilogue: Doing Upgrades Yourself. Upgrading memory may seem like a hazardous, daunting job, but once you've done it, you wonder why you were so worried about it. I'll go even further and say that opening up your Macintosh and taking an informed poke around its innards is invaluably educational.

The folks you bought the SIMMs from were telling you the Plain Truth about static electricity. If you first ground



Figure 5: Use the CD Remote DA and Apple's CD-ROM player to listen to your favorite tunes.

yourself (by touching an electrical ground or by wearing a wrist strap), your Mac's chances of becoming a victim of static are next to nil. If you're just plain rolling in dough, then sure, spend the extra \$100 or \$200 to have an upgrade inflicted by a professional. The only advantage is that if



something goes wrong - all together now - you'll have someone to sue.

Although thousands of folks use and swear by wrist straps. there is a very vocal minority that feels that providing electrons with a path to ground via your own body may not be such a great idea, in that it may increase your chances of electrocution. Personally, I'm very skeptical of this and haven't heard of any strap-related injuries, but I am presenting the info anyway.

#### CD-ROMs on a Laserdisc Player?

Q. Is it possible to play a CD-ROM on a video laserdisc player?

Lisa Scatt Austin, TX

Bob: Interestingly, you can play music CDs on the Apple CD-ROM drive. Apple even provides you with a nifty remote control - CD Remote - to let you choose which song you want to hear (see Figure 5).

But to answer your question, Lisa, No, you can't play a CD-ROM on a laserdisc player - not yet, anyway. I'm waiting for a universal laser player that reads CD-ROMs, audio CDs, and video laserdiscs. I expect it won't be long before one is announced. When one does appear, as long as it's not ridiculously expensive, you'll find me first in line to buy it.

#### **Devices with Only** One SCSI Port

Q. I have two devices — a scanner and a CD-ROM drive that each have only one SCSI connection. Is there any way to connect both devices on the same SCSI bus? I don't look forward to turning off my Mac, disconnecting one device, connecting the other, and then restarting each time I want to use one or other of the devices. This is especially inconvenient if I'm working on a DTP project in which I'm using the scanner as well as clip art from the CD-ROM drive.

Paul Selsor Salem, OR

Bob: I think you're out of luck. If a device has only one SCSI port, it has to be the last device in the SCSI chain. Because you have two devices that have only one SCSI port and only one device can be the last device in the chain, one device will have to remain unconnected.

There may be a solution, however. Tecmar ships a "T" connector with its single-SCSI- port tape drives. You can buy the connectors individually through a dealer for \$79 (part number 811677). If you're feeling creative, you might be able to jury-rig one of your own with some 50-pin connectors and ribbon cable, but there's no guarantee this homemade connector will work properly in your setup.

Andy: If you have an extra Macintosh handy (ha!), you could always hook it up to the CD-ROM drive, establish it as an AppleShare file server, and then AppleTalk it to your personal Macintosh. You'll then have both the CD-ROM drive and the scanner available simultaneously, but I kind of doubt that this was the solution you were hoping for (unless, of course, you have a large expense account or you work for the government!). 🖫

## No Wild, No Wildlife.

Life in the wild can be pretty tough these days. Without the necessary ancient-forest habitat to live in,

some species like the northern spotted owl of the Pacific Northwest are severely threatened.

The northern spotted owl makes its home in the ancient forests of Washington, Oregon

and Northern California. Due to the destruction of these forests through decades of heavy logging on both private and public lands, the northern spotted owl is threattened with extinction.

At the Sierra Club, we believe that these owls and the ancient forest ecosystems they depend on need our help. The Sierra Club's work to permanently





To learn more about our work protecting the forest habitats of endangered species such as the northern spotted owl, please write us at:

> Sierra Club, Dept. PB 730 Polk Street San Francisco, CA 94109 (415) 776-2211

## **WE'RE LOOKING FOR EVIDENCE** OF INTELLIGEN

If you have evidence of intelligence test scores which put you in the top 2% of the population - for example, 1250 or better on the SAT\* then you already qualify to join Mensa. We also accept the GRE (1250), Miller Analogies (66), Stanford Binet (132) and other tests. Send today for details.

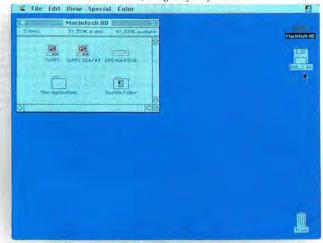
Name	
Address	
City/Shate/7in	



Send to MENSA, Dept. MU51, 2626 East 14th Street, Brooklyn, NY 11235-3992

\*1300, if you took the test prior to September 1977.

Please circle 411 on reader service card.



# Macintosh RD Sterm ST, 250% on the 41,570% anniable Series Series Con/At 1005 Mind Deal Copyright 1985, 1888 Latus Deal operation Ratease 2.2 Licensing Information: Wern Bases: Inflagrate Solutions Users Bases: Inflagra

## Click, It's A MAC.

## Click Click, It's A MAC And A PC.

Load SoftPC, click twice, and you've got a window wide open to the entire MS-DOS world. Everything a Mac can do plus everything a PC can do, in one machine.

Whether you're a Macintosh user who needs access to PC software and data, or a PC user who wants to go Macintosh without losing PC compatibility, you can have it all

with Insignia's best-selling software solutions. SoftPC is a software emulation precise enough to run the toughest PC applications—Norton Utilities, Lotus 1-2-3, Harvard Graphics, AutoCad, even custom development programs. You get complete XT or AT compatibility for the SE/30, Macintosh II family and the Macintosh Portable.

Add an EGA/AT Option Module, and get vibrant EGA color compatibility, LIM expanded memory and math coprocessor support.

New AccessPC lets you use PC and PS/2 disks just like Mac disks. Now you can move and view PC file and disk icons—even in locked or full disks!—format DOS disks, launch Mac applications and much more.

For more information and the name of a SoftPC dealer near you, call Insignia at 800-848-7677 (U.S. only) or 408-522-7600 (outside U.S.)

AccessP(

## MINIFINDERS

elcome to MiniFinders, your personal buyer's guide. This month's installment features a roundup of hardware products reviewed and rated over the past few years. For more recent reviews of color products and fax modems, please see the lab reports in this month's issue. MacUser editors carefully select and evaluate each product, assigning ratings from one to five mice, in half-mouse increments. All the ratings are relative within a category, and because the market is always changing, our ratings change too. We've indicated all of our Eddy (Editors' Choice) Award winners with a ★, along with the year in which they were recognized for their excellence.

#### MINIFINDER INDEX

MARDWARE	
DISPLAY SYSTEMS277	7
INPUT DEVICES279	,
MEDIA & MEMORY280	)
OUTPUT DEVICES283	3
PERFORMANCE ENHANCERS285	5
PORTABLES286	5
TELECOMMUNICATIONS286	5

#### DISPLAY SYSTEMS Apple AppleColor High-**Resolution RGB Display**

The 13-inch AppleColor High-Resolution RGB Display sets the standard for monitors for focus and color quality. It's very bright with no built-in glare protection. Can support 24-bit color when used with the Apple Macintosh Display Card 8•24 and 8•24gc. Its 69-dpi screen resolution gives a slightly larger-than-WYSIWYG image. Very reliable workhorse. Requires video card (optional with Mac LC, IIci, or IIsi). \$999; with Display Card 4-8, \$1,647. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014. (800) 776-2333 or (408) 996-1010. (May '90) Apple High-Resolution

Monochrome Display \$\$\$

The Apple High-Resolution Monochrome Display is a 12-inch monochrome landscape-oriented monitor that can accommodate the full width and more than half the length of a letter-sized page. It has a dim screen with average focus. Requires Mac II series with video card (optional with Mac IIci and Hsi). \$299; with 1-bit video card,

\$498. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014. (800) 776-2333 or (408) 996-1010. (Apr '90) Apple Portrait Display \$155/2

The 15-inch Portrait Display features a bright, crisp display; good glare protection; perfect geometry; and almost no nuisance factors. Can produce up to 256 gray levels, using a Macintosh Display Card 8•24. Its cable is odd make sure it fits your card. No software is included. Requires Mac II series with video card (optional with Mac IIci and IIsi). \$1,099; tilt-and-swivel stand, \$89. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014. (800) 776-2333 or (408) 996-1010. (Feb '91)

Apple Two-Page
Monochrome Monitor \$\$\$\$

The Apple Two-Page Monochrome Monitor is a 21-inch twopage display that features good focus, but has a dim display and moderate glare protection. Includes a card that can be upgraded to 256 levels of gray. Requires Mac II series with video card. \$2,149. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014. (800) 776-2333 or (408) 996-1010. (Apr '90) CalComp DrawingCard ChromaVision tttt

This 21-inch color monitor features good focus, sharpness, and color tracking. It is able to display two A4 pages. Has uneven screen coloration. Requires Mac II series. 8-bit Chroma Vision, \$6,395; 24-bit ChromaVision Plus, \$8,595. CalComp, 2411 W. La Palma Ave., Anaheim, CA 92801. (800) 225-2667 or (714) 821-2000. (May '90) Calcomp DrawingCard

GrayVision ttt

This expensive display system offers good glare protection and a tilt/swivel stand. It has a few problems that are too serious to ignore, however, including below average ratings in sharpness and focus. Its video card is not colorcapable. Requires Mac II series. \$3,195. CalComp, 2411 W. La Palma Ave., Anaheim, CA 92801. (800) 225-2667 or (714) 821-2000. (Oct '90)

**Cutting Edge** Full Page Display \$\$\$

The Cutting Edge Full Page Display is a 15-inch monochrome monitor with average image quality. Screen geometry is good, and nuisance factors are minimal. More expensive than comparable monitors. Requires Mac Plus or later. \$899. Cutting Edge, 97 S. Red Willow Rd., Evanston, WY 82930. (307) 789-0582. (Feb '91)

DTI SpeedView Portrait Monitor \$\$\$\$

The SpeedView is a full-page display designed for users who need large screen acreage to view full tabloid-sized pages. Image quality is impressive, because it's competitive with that of smaller 15-inch displays. Comes with a monochrome or gray-scale card. Requires Mac II series, \$2,495. Digital Technology International, 500 W. 1200 S., Orem, UT 84058. (801) 226-2984. (Feb '91)

E-Machines ColorPage 15 \$\$\% The 15-inch ColorPage 15 offers good glare protection and excellent software. It suffers from dim display, poor focus, and poor color quality.\$1,595. E-Machines, Inc., 9305 S.W. Gemini Dr., Beaverton, OR 97005. (800) 344-7274 or (503) 646-6699. (May '90)

E-Machines ColorPage T16

The ColorPage T16 is simply one of the best and brightest 8-bitcolor monitors. It's a razor-sharp Sony Trinitron display with nearly perfect color, and the video card is excellent. Requires Mac II series with NuBus adapter. \$2,998. E-Machines, Inc., 9305 S.W. Gemini Dr., Beaverton, OR 97005. (800) 344-7274 or (503) 646-6699. (May '90)

E-Machines The Big Picture 17" ttt

This 17-inch monochrome monitor has a greenish tint. Focus is satisfactory, but brightness is uneven, and there is slight ghosting. \$1,650. E-Machines, Inc., 9305 S.W. Gemini Dr., Beaverton, OR 97005. (800) 344-7274 or (503) 646-6699. (Apr '90)

E-Machines TX tttt

The TX uses the same phyiscal monitor as the T16 but includes a higher-resolution video card. The 87-dpi screen resolution is good for CAD and freehand drawing, but it can make text hard to read unless the type size is increased. Requires Mac SE/30 or II series with NuBus adapter. \$4,495. E-Machines, Inc., 9305 S.W. Gemini Dr., Beaverton, OR 97005. (800) 344-7274 or (503) 646-6699. (May '90) E-Machines QuickView Z21

This 21-inch monochrome monitor has four dpi settings (36, 40, 72, and 80). Its display is dim and not very sharp. Includes a simple gray-scale upgrade and a virtual screen. Good software. Requires Mac SE, SE/30, or II series. Mac SE, \$2,390; SE/30 and II series, \$2,490. E-Machines, Inc., 9305 S.W. Gemini Dr., Beaverton, OR 97005. (800) 344-7274 or (503) 646-6699. (Apr '90) Ehman Full Page Display

The Ehman Full Page Display, with its 15-inch monochrome screen, is well worth the investment. Performance is not as high as that of some more expensive monitors and image quality is average, but this is still a good bargain. Requires Mac Plus or later. \$499. Ehman Engineering, Inc., 97 S. Red Willow Rd., Evanston, WY 82930. (800) 257-1666 or (307) 789-3830. (Feb '91)

**Ehman Two Page Monitor** 

This 19-inch monochrome monitor scores above average in brightness and focus but only fair in its nuisance rating. Includes Stepping Out II software. Requires SE, SE/30, or Mac II. \$899. Ehman Engineering, Inc., 97 S. Red Willow Rd., Evanston, WY 82930. (800) 257-1666 or (307) 789-3830. (Apr '90) Generation Systems CT-II

The 20-inch CT-II monitor is bright and fairly sharp. Offers

#### MINIFINDERS

excellent color and software. Mac II or SE/30, 8-bit, \$3,999; Mac II, 24-bit. \$4,999. Generation Systems, 1185-C Bordeaux Dr., Sunnyvale, CA 94089. (800) 448-8231 or (408) 734-2100. (May

MacProducts Magic View Color ttt

This 14-inch color monitor features excellent convergence and some of the best gray linearity available, enabling it to display subtle image variation. A blotchy screen and lack of software diminish its value. Requires Mac SE/30 or II series. Mac II, 8-bit, \$699; SE/30, 8-bit, \$719. MacProducts USA, Inc., 8303 Mopac Expy., #218, Austin, TX 78759. (800) 622-3475 or (512) 343-9441. (May '90) MacProducts MagicView 19

MagicView's solid 19-inch monochrome monitor has a bright display, above-average MTFsharpness ratings, and fair focus. \$899. MacProducts USA, Inc., 8303 Mopac Expy., #218, Austin, TX 78759. (800) 622-3475 or (512) 343-9441. (Apr '90)

MacTel Technology Index Portrait Display System ttt

The Index Portrait Display provides a 15-inch-diagonal monochrome screen with average image quality. Focus is below average but adequate. More expensive than comparable monitors. Video cards are available for the SE, SE/ 30, and Mac II family. Comes with tilt/swivel stand. \$625. MacTel Technology, 3007 N. Lamar, Austin, TX 78705; (800) 950-8411 or (512) 451-2600. (Feb

Mass Microsystems ColorSpace Ili/FX tttt

The Mass Microsystems Color-Space IIi/FX board combo brings live 24-bit video to the Mac. The FX board converts composite NTSC or PAL video signals to RGB for display on a Mac monitor. The IIi lets you mix live video with computer graphics. Utilities include the Digitizer DA, Desktop Video DA, and MacTV. The software is somewhat quirky, but the boards deliver true live-videooverlay functionality. Requires Mac II series. \$2,299.95; Color-Space FX, \$3,499.95; cable, \$99.95. Mass Microsystems, Inc., 810 W. Maude Ave., Sunnyvale, CA 94086. (800) 522-7979 or (408) 522-1200. (Mar '90) ★'88 Eddy

MegaGraphics MegaScreen 2008 \$\$\$\$

This 19-inch monitor rates low on the sharpness scale but offers good focus and excellent color. A16inch system is also available. Mac II, 8-bit, \$3,999; SE/30, 8-bit, \$6,198. MegaGraphics, 439 Calle San Pablo, Camarillo, CA 93012. (800) 423-0183 or (805) 484-3799. (May '90)

MegaGraphics MegaScreen Rival tttt

This 19-inch monochrome monitor features superior contrast, displaying true whites and deep blacks. Excellent brightness and average focus make it a smart choice. Mac Plus, \$1,748, Mac SE, SE/30, or II series, \$1,698. MegaGraphics, 439 Calle San Pablo, Camarillo, CA 93012. (800) 423-0183 or (805) 484-3799. (Apr '90)

Micro Display MacGenius tttt

This 15-inch monochrome monitor offers a bright display and innovative software that includes inverse-video capabilities. It gives Plus and SE users an attractive video option. Some installation difficulty. Requires Mac Plus, SE, or II series. Mac II series, \$1,495; Plus or SE systems, \$995. Micro Display Systems, 755 E. 31st St., Hastings, MN 55033. (800) 328-9524 or (612) 437-2233. (Apr '90)

Mirror Technologies PixelView I ttt

This monochrome full-page display is unusual, in that it can be used with a Mac Plus, for which it includes special software. Image quality is average. \$567. Mirror Technologies, 2644 Patton Rd., Roseville, MN 55113. (800) 654-5294 or (612) 633-4450, (Feb '91)

Mobius Technologies One Page Display \$\$\$\$

A good choice for SE owners, the 15-inch monochrome One Page Display offers an interface card with a CPU accelerator to speed up processing. Screen-extension software for the SE is also included. Requires Mac SE, SE/30, or II series. \$795. Mobius Technologies, Inc., 5835 Doyle St., Emeryville, CA 94608. (800) 669-0556 or (415) 654-0556. (Feb '91)

Moniterm Viking 2/72 tttt This 19-inch monochrome monitor has high sharpness and focus ratings. Requires Mac SE, SE/30, or II series. \$1,795. Moniterm, 5740 Green Circle Dr., Minnetonka, MN 55343. (612) 935-4151. (Apr '90)

Moniterm Viking 2400 tt%

Big monitors are generally hard to focus, and the 24-inch Viking 2400 is no exception. It offers OCLI coating for glare protection, however. Requires SE or II series. \$2,595. Moniterm, 5740 Green Circle Dr., Minnetonka, MN 55343. (612) 935-4151. (Apr '90)

Nutmeg 19" Mono Display

This 19-inch monochrome monitor is bright, with average focus and fair geometry. Good software, including Stepping Out II. \$1,699. Nutmeg Systems, 25 South Ave., New Canaan, CT 06840. (203) 966-3226. (Apr '90) PCPC II 19"

Color Graphics System ttt/2

The 19-inch PCPC monitor has average sharpness, average gray linearity, and good convergence. Color is excellent. The display reveals a noticeable flicker. Includes Stepping Out II software. Offers 16-bit capability for SE/30 system. Mac II, 8-bit, \$5,995. Personal Computer Peripherals Corp., 4710 Eisenhower Blvd., Building A4, Tampa, FL 33634. (800) 622-2888 or (813) 884-3092. (May '90) Princeton Publishing

MultiView II \$1/2

This monitor received poor geometry and focus ratings. Not recommended. Requires Mac SE or later. \$555; with board for Mac SE or SE/30, \$845. Princeton Publishing Labs, Inc., 101 BusinessPark Dr., Ste. 100, Skillman, NJ 08558. (609) 924-1153. (Feb

Radius Color Display tttt

The Radius Color Display uses a 19-inch Sony Trinitron tube. Depending on the board installed, 8and 24-bit color is supported. The 82-dpi screen resolution isn't WYSIWYG, but the display can show two full 8.5-x-11-inch pages. Low MTF sharpness, good focus, fair convergence, and excellent software. The 24-bit model has an optional QuickDraw accelerator. Requires Mac II series. Mac II, 8bit, \$6,190; Mac II, 24-bit, \$8,390. Radius, Inc., 1710 Fortune Dr., San Jose, CA 95131. (800) 227-2795 or (408) 434-1010. (May

Radius Pivot ###

The Radius Pivot is an impressive 15-inch full-page monitor that features a high-quality display with great focus and excellent brightness. It's expensive, but it has the unique ability to rotate 90 degrees between portrait and landscape orientation. A good monitor on the brink of being great. Requires SE/30 or Mac II series. \$1,690. Radius, Inc., 1710 For-tune Dr., San Jose, CA 95131. (800) 227-2795 or (408) 434-1010. (Feb '91)

Radius Two Page Display/19

The Radius Two Page Display/ 19 is a bright, well-focused, 19inch monochrome display system that comes with Radius' justly famous software, which includes tear-off menus and screen-capture capabilities. This unit is expensive compared with similar systems. Requires Mac SE, SE/ 30, or II series. \$1,990. Radius Inc., 1710 Fortune Dr., San Jose, CA 95131. (800) 227-2795 or (408) 434-1010. (Apr '90) \* '88 Eddy

Radius Two Page Display/21 tttt/2

This monitor lacks perfect WYSIWYG, but it does display a great deal of information. It performed well on all tests except MTF sharpness. Its lack of glare protection is a trade-off for its brightness. Excellent geometry. Its linearity, focus, and lack-ofnuisance ratings are above average. Requires Mac SE, SE/30, or II series. \$2,390. Radius, Inc., 1710 Fortune Dr., San Jose, CA 95131, (800) 227-2795 or (408) 434-1010. (Oct '90)

RasterOps ClearVue/GS **\$**\$\$\$

RasterOps' 19-inch ClearVue/GS offers excellent focus and aboveaverage brightness and MTF sharpness but below-average linearity and geometry. Color and SE/30 boards available. Requires Mac II series. \$2,195. RasterOps, 2500 Walsh Ave., Santa Clara, CA 95051. (800) 468-7600 or (408) 562-4200. (Oct '90)

RasterOps ClearVue/SE tttt/2 A "best buy" for SE owners, the 19-inch ClearVue display system features a video card that doubles as a CPU accelerator, This model received a high score for its MTF sharpness and offers good focus and brightness. Includes excellent software. \$1,795. RasterOps, 2500 Walsh Ave., Santa Clara, CA 95051. (800) 468-7600 or (408) 562-4200. (Apr '90)

RasterOps Video ColorBoard 364 \$\$\$\$1/2

The RasterOps 364 is an excellent 24-bit color-graphics and livevideo display card with very good software. It doesn't require a separate display system to drive your monitor and comes with extras such as a set of MacroMind Director X-Objects and a Hyper-Card stack with video XCMDs. Running it with memory- and CPU-intensive applications is impractical on machines with less than 8 megabytes. \$1,995. Raster-Ops, 2500 Walsh Ave., Santa Clara, CA 95051. (800) 468-7600 or (408) 562-4200. (Oct '90) \* '90

Relax Ikegami Trinitron ### An annoying flicker and a slight convergence problem mar this otherwise solid 20-inch monitor. Excellent sharpness. \$4,995. Relax Technology, 3101 Whipple Rd., Union City, CA 94587. (800) 848-1313 or (415) 471-6112.

(May '90) Sigma Designs

ColorMAX 8/24 \*\*\*\* The 19-inch ColorMAX 8/24's video card can easily be converted from 8 bits to 24 bits for users wanting 16.8 million colors. Good general-purpose system, but it lacks software. Requires Mac II series. 8-bit system, \$6,095; 24-bit system, \$6,695. Sigma Designs, 46501 Landing Pkwy., Fremont, CA 94538. (415) 770-0100. (May '90)

Sigma Designs L-View tttt/2 This 19-inch monochrome monitor leads the pack in sharpness and focus. Includes exceptional software. Requires Mac SE, SE/ 30, or II series. Mac II or SE/30, \$2,495; for Mac SE, \$2,395. Sigma Designs, 46501 Landing

Pkwy., Fremont, CA 94538. (415) 770-0100. (Apr '90)

Sigma Designs PageView \$\$\$1/2

This full-page monochrome monitor offers multiple resolutions - 72, 80, and 88 dpi. Performance is good, and the screen is sharp. You can buy just the monitor with cable, without a video card, for the Mac IIsi and IIci to save money. Requires Mac SE or later. \$1,199; Ilsi and ci, \$899. Sigma Designs, 46501 Landing Pkwy., Fremont, CA 94538. (415) 770-0100. (Feb '91)

Sigma Designs SilverView

The 21-inch SilverView is a bargain, priced slightly higher than most 19-inch monitors. It features a bright, well-focused display; excellent software; and aboveaverage geometry. Requires SE, SE/30, or II series. \$1,999; with 256 gray levels, \$2,399. Sigma Designs, 46501 Landing Pkwy., Fremont, CA 94538. (415) 770-0100. (Apr '90) SuperMac 19" Platinum

Display tttt

This monitor performs exceptionally well and has a complete feature set, including a color-capable card, hardware pan and zoom, a virtual desktop, and glare protection. Excellent focus, geometry, and lack-of-nuisance ratings. Above-average brightness and sharpness. Requires Mac II series. \$1,399; monochrome card, \$499. SuperMac Technology, 485 Potrero Ave., Sunnyvale, CA 94086. (408) 245-2202. (Oct '90) SuperMac 19" Dual-Mode

Trinitron Display \$\$\$\$\frac{1}{2}\$ This bright, fairly sharp 19-inch color monitor has excellent focus. Includes hardware pan and zoom and a QuickDraw accelerator. Requires Mac II series. \$4,200. Accelerated 8-bit-color-graphics cards: Spectrum/8 PDQ, \$1,899; Spectrum/24 Series 3, \$2,999; Spectrum/24 PDQ, \$3,999. Graphics card: Spectrum/8 Series 3, \$999. SuperMac Technology, 485 Potrero Ave., Sunnyvale, CA 94086. (408) 245-2202. (May '90) SuperMac SuperMatch 19"

Color Display \$\$\$\$

This bright, fairly sharp 19-inch color monitor has good convergence but poor gray linearity. Includes hardware pan and zoom as well as a QuickDraw accelerator. Requires Mac II series. \$2,800. Accelerated 8-bit-color-graphics cards: Spectrum/8 PDQ, \$1,899; Spectrum/24 Series 3, \$2,999; Spectrum/24 PDQ, \$3,999. Graphics card: Spectrum/8 Series 3, \$999. SuperMac Technology, 485 Potrero Ave., Sunnyvale, CA 94086. (408) 245-2202. (May '90)

Taxan Crystal View tttt This 19-inch monochrome monitor is bright — but has poor subjective focus despite high MTF. \$1,695. Taxan, 161 Nortech Pkwy., San Jose, CA 95134, (408) 946-3400. (Apr '90)

#### INPUT DEVICES Abaton 8-bit Apple Upgrade tttt

This upgrade kit turns a 4-bit Apple Scanner into an improved 8-bit Abaton 300/GS with access to 256 gray levels. \$595. Abaton Technology, 48431 Milmont Dr., Fremont, CA 94538. (415) 683-2226. (Sept '90)

Abaton Scan 300/GS ttt1/2

Abaton's gray-scale flatbed scanner produces good halftones. Bundled with Digital Darkroom and ImageStudio. \$1,595. Abaton Technology, 48431 Milmont Dr., Fremont, CA 94538. (415) 683-2226. (Sept '90)

Agfa Focus S800GS tttt

The Focus S800GS is a 400-dpi, 6-bit gray-scale scanner that simulates resolutions up to 800 dpi. It has superior resolution and good halftone quality. Professional-quality software includes extensive editing capability and printing options. Requires Mac Plus or later with 1 megabyte of RAM; MC View software required for use with Mac. \$3,995; MC View software, \$495. Agfa Compugraphic, 200 Ballardvale St., Wilmington, MA 01887. (800) 227-2780 or (508) 658-5600. (June '89) \*'88 Eddy

Agfa Focus II 800GSE \$\$\$\$\% Agfa's 8-bit gray-scale flatbed scanner has 400-dpi resolution and excellent, intuitive software that has automatic calibration and sophisticated image-editing capabilities. A first-rate product. MC View software required for use with Mac. \$5,495; MC View software, \$495. Agfa Compugraphic, 200 Ballardvale St., Wilmington, MA 01887. (800) 227-2780 or (508) 658-5600. (Sept '90)

Apple Scanner ttt/2

The Apple Scanner is not state of the art but is adequate for neophytes. This 4-bit (16 gray-level) scanner comes with AppleScan software as well as HyperScan, written by Bill Atkinson. Requires appropriate SCSI cables. \$1,799. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014. (800) 776-2333 or (408) 996-1010. (Sept '90)

Barneyscan CIS-3515 tttt

This color-slide scanner yields excellent color. Fast, easy to set up, and one of the few scanners that offers postscanning imagemanipulation tools. \$9,495. Barneyscan, 1125 Atlantic Ave., Alameda, CA 94501. (415) 521-3388. (Sept '90)

Chinon DS-3000 ttt/2

Chinon's 300-dpi monochrome overhead scanner is inexpensive but slow. Despite its poor resolvability, it's a good OCR alternative. \$895. Chinon alternative. \$895. Chinon America, 660 Maple Ave., Torrance, CA 90503. (213) 533-0274.

(Sept '90)

Complete PC Complete Half-Page Scanner/400 ttt/

This black-and-white hand-held scanner features true 400-dpi resolution, making it an excellent OCR tool. \$399. Complete PC, 1983 Concourse Dr., San Jose, CA 95131. (800) 634-5558 or (408) 434-0145. (Sept '90)

DataDesk International Switchboard \$\$\$\$\$

This modular, customizable keyboard has three standard modules a cursor keypad, a numeric keypad, and a OWERTY alphanumeric keyboard - that users can rearrange to satisfy their ergonomic needs. A trackball module is optional. \$239.95. DataDesk International, 9330 Eton Ave., Chatsworth, CA 91311. (800) 826-5398, (800) 592-9602 (CA), or (818) 998-4200. (Nov '90)

DEST PC Scan 3000 tttt

This gray-scale flatbed scanner produces sharp images with even illumination. \$1,595. DEST, 1015 E. Brokaw Rd., San Jose, CA 95131. (408) 436-2700. (Sept '90)

Hewlett-Packard ScanJet Plus 111/2

This gray-scale flatbed scanner is fast and easy to use. Excellent, intuitive software. \$2,190. Hewlett-Packard, 19091 Pruneridge Ave., Cupertino, CA 95014. (800) 752-0900 or (408) 725-8900. (Sept

Howtek Scanmaster tttt

This flatbed scanner is very large and somewhat slow. Includes powerful color controls in software. Poor OCR. Requires Mac II series. \$8,195. Howtek, 21 Park Ave., Hudson, NH 03051. (603) 882-5200. (Sept '90)

Howtek Scanmaster 35/II tt This slide scanner beats the other two slide scanners we tested in only one area - price. Given its slow scan times, poor color fidelity, and unfriendly software, the low price fails to compensate for its overall poor performance. Usable images can be obtained after much tweaking from an application such as Adobe Photoshop. \$6,995. Howtek, 21 Park Ave., Hudson, NH 03051. (603) 882-5200. (Sept '90)

Logitech ScanMan Model 32

Logitech's sharp-looking handheld black-and-white scanner produces excellent line art and includes the nifty ability to scan a graphic from top to bottom, from left to right, or from right to left. Its gray-scale dithering capability is a little inconsistent. \$499. Logitech, 6505 Kaiser Dr., Fremont, CA 94555. (415) 795-8500. (Sept '90)

Microtek MSF-300GS ttt%

This 300-dpi flatbed scanner comes with nice software, including Digital Darkroom and Image-Studio. It can process legal-sized documents. \$2,195. Microtek, 680

Knox St., Torrance, CA 90502. (213) 321-2121. (Sept '90) Microtek MSF-300Z 1111

The default settings of this color/ gray-scale scanner, which comes with uncomplicated software, produce rich, saturated scans. The software bundle includes Digital Darkroom, ImageStudio, and PhotoMacEdit. Requires Mac SE/ 30 or II series. \$2,695. Microtek, 680 Knox St., Torrance, CA 90502. (213) 321-2121. (Sept '90)

Mirror VS300 \$\$\$1/2 This 300-dpi monochrome overhead scanner has poor resolvability and uneven contrast but includes a nice software bundle. \$797. Mirror Technologies, Inc., 2644 Patton Rd., Roseville, MN 55113. (800) 654-5294 or (612) 633-4450. (Sept '90)

Nikon LS-3500 \*\*\*\*\*/2

This color-slide scanner could use friendlier software, but its excellent resolution and wide range of controls make it a winner. Focusing and calibration are automatic. Has variable input resolution but lacks postprocessing capabilities. Requires Mac II series with 2 megabytes of RAM. \$9,995; GPIB board, \$495, Nikon, 1300 Walt Whitman Blvd., Melville, NY 11747. (516) 547-4200. (Sept '90) Pentax SB-A4301 Model 2 11/2

Poor gray-scale performance accounts for this gray-scale flatbed's low rating. Scans to RAM only. \$1,799. Pentax Teknologies, 100 Technology Dr., Broomfield, CO 80020. (303) 460-1600. (Sept '90)

**Pointer Systems** FreeWheel Pointer 111/2

The FreeWheel Pointer lets users control their Mac by bouncing infrared light off a small lightweight mirror on the user's forehead. Compact receiver unit and a puff switch. The standard keyboard arrangement is visible onscreen. \$1,395. Pointer Systems, Inc., One Mill St., Burlington, VT 05401. (800) 537-1562 or (802) 658-3260. (Oct '89) Sharp JX-100 ttt//2

This inexpensive portable color scanner is actually a hybrid handheld/flatbed scanner. Good resolvability but low resolution. Scans to RAM only. Requires 4megabyte Mac II. \$995. Sharp Electronics, Sharp Plaza, Mahwah, NJ 07430. (201) 529-8200. (Sept '90)

Sharp JX-300 ttt/2

This color flatbed scanner can produce realistic flesh tones as well as superior color output. Scans to RAM only. Requires 2megabyte Mac II. \$2,345. Sharp Electronics, Sharp Plaza, Mahwah, NJ 07430. (201) 529-8200. (Sept '90)

**Thunderware** LightningScan 400 tttt/2

This hand-held gray-scale scanner has good hardware performance combined with innovative

#### MINIFINDERS

software, \$495. Thunderware, Inc., 21 Orinda Way, Orinda, CA 94563. (800) 445-1166 or (415) 

The Truvel TZ-3 is a high-end gray-scale overhead scanner with exceptional resolution (900 dpi), superior halftone output, and the ability to handle large documents. Uneven illumination at edges. Scans only to RAM. \$7,785. Truvel, 8943 Fullbright Ave., Chatsworth, CA 91311. (818) 407-1031. (Sept '90)

UMAX UG80 \$\$\$1/2

The UMAX UG80 gray-scale flatbed scanner has excellent resolvability and gray-scale capability. Convenient to use and easy to maintain. \$1,895. UMAX Technologies, 2352 Walsh Ave., Santa Clara, CA 95051. (800) 562-0311 or (408) 982-0771. (Sept

Varityper 1200 tttt

The Varityper 1200 features high resolution. Excellent OCR capabilities and powerful software controls. The 1200 system includes an 8-megabyte Mac IIcx, a 210-megabyte hard-disk drive, and a Radius 19-inch gray-scale monitor. \$29,000. Varityper, 11 Mt. Pleasant Ave., East Hanover, NJ 07936. (201) 887-8000. (Sept

Wacom SD-510C Cordless Digitizer tttt

The SD-510C Cordless Digitizer uses a pressure-sensitive stylus that's much more responsive than a mouse. This light and very thin unit requires neither a cord nor a battery. The tablet connects to the modem port. Its sensing area is 6 x 9 inches. The resolution is 770 lpi at high accuracy. At \$695, it includes the Pressure Paint program. Wacom, Inc., W. 115 Century Rd., Paramus, NJ 07652. (800) 922-6613 or (201) 265-4226. (June '90)

#### MEDIA & MEMORY AGA MacDISCUS DR650-SE ttt

The AGA MacDISCUS DR650-SE is a slow erasable optical drive. It easily auto-mounts (even without an INIT), and partitions can be write-protected. Support is tollfree. \$3,795. AGA, 653 11th Ave., 11th Floor, New York, NY 10036. (800) 347-2871 or (212) 265-0655. (Nov '90)

AppleCD SC ###

This is the drive that launched Mac CD-ROM. Although it's expensive, it's well built and offers good - but not great -Audio features include RCA stereo jacks; a convenient thumbwheel volume control; and CD Remote, some of the best audiocontrol software available. \$1,199. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014. (800) 776-2333 or (408) 996-1010. (Mar '90)

APS 45 MB Removable ttt

Alliance Peripheral's SyQuest drive comes in a plastic case and is bundled with 12.5 megabytes of shareware. Documentation is sparse, but the toll-free support may be all you need to keep going. With cartridge, \$549; with dual cartridge, \$999. Alliance Peripheral Systems, 2900 S. 291 Highway, Independence, MO 64057. (800) 233-7550 or (816) 478-8300. (Feb '91)

Bay Microsystems 300 ttt

The Bay 300 is a big hard-disk drive with an actual capacity of 291 megabytes. Its seek times are slow, and it has low throughput. \$1,650. Bay Microsystems, 210 Columbus Ave., Suite 108, San Francisco, CA 94133. (415) 563-8392. (Dec '90)

Bay Microsystems 44 RePack

This SyQuest-based removablemagnetic-disk-cartridge drive comes in a plastic (not metal) case and includes a one-year warranty. Documentation is well written. Bundled diagnostic software is rudimentary. With cartridge, \$675; additional cartridge, \$72. Bay Microsystems, Inc., 210 Columbus Ave., Suite 108, San Francisco, CA 94133. (415) 563-8392. (Feb '91)
Bay Microsystems 600RePack

The Bay Microsystems 600Re-Pack is an easy-to-use erasable optical drive with good access times. Includes few utilities. \$3,600. Bay Microsystems, 210 Columbus Ave., Suite 108, San Francisco, CA 94133. (415) 563-8392. (Nov '90)

CD Technology Porta-Drive

This compact and versatile unit comes with a separate power supply or optional battery pack. Uses the Toshiba 3201-B mechanism, the fastest on the market. \$895; battery pack, \$200; PlayCD upgrade, \$50. CD Technology, 780 Montague Expy., Suite 407, San Jose, CA 95131. (408) 432-8698. (Mar. '90)

ClubMac 45 MB \$\$\$ The SyQuest-based ClubMac 45 MB unit (formerly known as ClubMac 44 MB) is a removablecartridge drive that comes in a flexible plastic case. Has a quiet fan. Supports A/UX drive partitioning. Includes cables and software. Documentation is rudimentary. Comes with a cartridge. \$495. ClubMac, 7 Musick, Irvine, CA 92718. (800) 258-2622 or (714) 768-1490. (Feb '91)

CMS Enhancements MacStack SD45RM ttt

This SyQuest removable-cartridge drive comes with excellent documentation and auto-switching power supply. \$999. CMS Enhancements, Inc., 2722 Michelson Dr., Irvine, CA 92715. (714) 222-6000. (Feb '91) CMS Platinum Series PD 300

the CMS Platinum Series PD 300 is a hard-disk drive with an actual capacity of 291 megabytes. It includes good software but has slow seek times and low throughput. On the plus side, it does include good software. \$3,299. CMS Enhancements, 2722 Michelson Dr., Irvine, CA 92715. (714) 222-6000. (Dec '90)

**Conversion Dynamics** Optirase EOD-650 ttt

Conversion Dynamics Optirase EOD-650 is an erasable optical drive that has a good speed rating. It has an auto-switching power supply and includes Redux software. Support is toll-free. \$5,450. Conversion Dynamics, 1200 Corporate Dr., Suite 150, Bir-mingham, AL 35242. (205) 991-8338. (Nov '90)

Corel 50 MB Removable ttt

This metal-encased Ricoh-based magnetic-disk-cartridge drive is durable. It lacks speed, however, and documentation is sparse. Drive with kit, \$1,295; kit only, \$295. Corel Systems, 1600 Carling Ave., Suite 190, Ottowa, Ontario K12 8R7, Canada. (613) 728-8200. (Feb '91)

Cranel 330 MB \$\$\$1/2

The Cranel 330 MB is a 321megabyte hard-disk drive. Its seek times and throughput rate are average. It has one of the largest cases for hard-disk drives of similar capacity. Cranel provides good customer support. \$2,350. Cranel, 510F E. Wilson Bridge Rd., Worthington, OH 43085. (800) 288-4375 or (614) 433-0045. (Dec '90) **Cutting Edge** 

44 MB Removable ttt

This sturdy, well-built SyQuest removable-cartridge drive comes in a metal case. Includes dualfuse protection and two switched AC outlets. \$1,149. Cutting Edge, 97 S. Red Willow Rd., Evanston, WY 82930. (307) 789-0582. (Feb

**Data Enhancements** ProCase PD1045-RM ttt/2

This SyQuest magnetic-disk-cartridge drive comes with powerful software. It supports A/UX drive partitioning and has a competitive speed rating. Requires Mac Plus or later. \$598. Data Enhancements, Inc., 31328 Via Colinas, Unit 102, Westlake Village, CA 91362. (818) 879-2700. (Feb '91)

Data Enhancements ProSystem PS1350 ttt

The Data Enhancements Pro-System PS1350 is a hard-disk drive with a capacity of 330 megabytes. Its seek times are average, and its throughput is low. \$3,189. Data Enhancements, 31328 Via Colinas, Unit 102, Westlake Village, CA 91362. (818) 879-2700. (Dec '90)

DaynaFile for NeXT ttt The DaynaFile for NeXT floppy drive enables file transfer between DOS disks and the NeXT, as well as creation of NeXT UNIX disks. It comes in three configurations. Only the 3.5-inch model can exchange files with a Mac. It doesn't support Mac disks. 5.25-inch drive, \$750; 3.5-inch drive, \$850; both, \$1,105. Dayna Communications, 50 S. Main, 5th Floor, Salt Lake City, UT 84144. (801) 531-0600. (Oct '90)

Deltaic Server 3000 ttt%

The Deltaic Server 300Q is actually a 326-megabyte hard-disk drive that features exceptional performance with some of the fastest seek times available. It has only average throughput, however. \$2,299. Deltaic, 1701 Junction Ct., #302B, San Jose, CA 95112. (800) 745-1240 or (408) 441-1240. (Dec '90)

**Deltaic Systems** OptiServer 600 ttt/2

The Deltaic Systems OptiServer 600 is an extremely quiet erasable optical drive with sophisticated software that maps out bad sectors and parks heads. Includes a few software utilities. \$3,599. Deltaic Systems, 1701 Junction Ct., #302B, San Jose, CA 95112. (800) 745-1240 or (408) 441-1240. (Nov '90)

DPI 44 Removable ###

This SyQuest removable-cartridge drive features a vertically mounted drive encased in sturdy metal. Its diode-regulated fan ensures cool operation. Comes with cartridge. \$570. DPI, 47421 Bayside Pkwy., Fremont, CA 94538. (800) 825-1850 or (415) 656-8041. (Feb '91)

Denon DRD-253 tt/2 The ponderous performance of this CD-ROM drive makes it lag far behind many other drives. The built-in speaker is good for working with audio, but it doesn't account for the box's large size. You can also operate it as a standalone audio-CD player but only after you've disconnected it from the Mac and set a bank of DIP switches. It's slow and lacks audio software. \$940. Denon America, 222 New Rd., Parsippany, NJ 07054.(201)575-7810.(Mar '90)

DIT CubeFloppy 1.4 \$\$\$1/2 The CubeFloppy 1.4 is a compact 3.5-inch floppy drive that reads DOS 720K and 1.4-megabyte disks. Includes capability to initialize, mount, and unmount UNIX floppies via NeXT's Shell, a command-line interface. Doesn't read or write Mac-formatted disks, but that capability is planned for the future. With software, \$680; software only, \$250. Digital Instrumentation Technology, Inc., 901 18th St., Suite 11000, Los Alamos, NM 87544. (505) 662-1482. (Oct '90)

Ehman 45 MB Removable 111/2

This SyQuest removable-cartridge drive is well built and reasonably priced. A standout in speed and

performance tests. Requires any Mac. \$549. Ehman Engineering, Inc., 97 S. Red Willow Rd., Evanston, WY 82930. (800) 257-1666 or (307) 789-3830. (Feb '91)

Fifth Generation FastBack Tape 1111/2

FastBack Tape includes everything you need to back up your data in one convenient package: an FB120 tape drive, FastBack II 2.10, manuals for the tape drive and FastBack II, a SCSI terminator block, a preformatted DC 2110 minicartridge, and all the necessary cables. It is costly and a little slow compared with other backup devices, but if tape is your backup of choice, you'd be hard-pressed to find a more polished product. \$1,395. Fifth Generation Systems, 10049 N. Reiger Rd., Baton Rouge, LA 70809. (800) 873-4384 or (504) 291-7221. (July '90)

FWB HammerDisk44 \$55 / 2 The SyQuest-based Hammer-Disk44 is a pricey, high-quality storage unit. It features a metal case, a well-designed power supply, external SCSI termination, an effective cooling system, high-quality formatting software, and easy-to-use documentation. Outstanding speed. \$1,395. FWB, 2040 Polk St., Suite 215, San Francisco, CA 94109. (415) 474-8055. (Feb '91)

FWB Hammer 300 tttt%

The compact FWB Hammer 300 is a hard-disk drive with an actual capacity of 323 megabytes. Highly recommended as a network server because of its superquick seek times and high throughput, this drive just missed a five-mouse rating because of its undistinguished proprietary software and generic metal case. \$3,495. FWB, 2040 Polk St., Suite 215, San Francisco, CA 94109. (800) 474-8055 or (415) 474-8055. (Dec '90) FWB HammerDisk 600 \$\frac{1}{2}\frac{

This Ricoh-based erasable optical drive attained very competitive speeds. Includes numerous software utilities. \$4,995. FWB, 2040 Polk St., Suite 215, San Francisco, CA 94109. (800) 474-8055 or (415) 474-8055. (Nov '90)

FWB HammerDisk 600S

The Sony-based FWB Hammer-Disk 600S has one of the best speed ratings for erasable optical drives. Sophisticated software overrides copy protection. The only drawback to this nice machine is the lack of an auto-eject function on dismount or shutdown. \$5,495. FWB, 2040 Polk St., Suite 215, San Francisco, CA 94109. (800) 474-8055 or (415) 474-8055. (Nov '90)

GCC UltraDrive 430S ttttt

The GCC UltraDrive 430S is a high-throughput hard-disk drive with an actual capacity of 42s megabytes. Highly recommended for storing large database, graph-

ics, sound, or animation files, because of its excellent throughput scores and average seek times. It includes a QuickDraw print spooler, SUM II, 3.5 megabytes of public-domain software, and its own envelope-printing utility. Support is also good. \$2,699. GCC Technologies, 580 Winter St., Waltham, MA 02154. (800) 422-7777 or (617) 890-0880. (Dec '90)

Hard Drives International PowerDrive 44 111/2

This SyQuest magnetic-disk-cartridge drive comes with good software. It has a sturdy metal case, but no shielding on SCSI connectors. With cartridge, \$575; additional cartridge, \$79. Hard Drives International, 1912 W. Fourth St., Tempe, AZ 85281. (800) 733-3473 or (602) 350-1128. (Feb '91)

HDI POWERDrive 320 111/2

The HDI POWERDrive 320 is a hard-disk drive with an actual capacity of 330 megabytes. It has average seek times and throughput. \$1,499. Hard Drives International, 1912 W. Fourth St., Tempe, AZ 85281. (800) 733-3473 or (602) 350-1128. (Dec '90)

IDS VPS340 ttt/2

The IDS VPS340 is a hard-disk drive with a capacity of 330 megabytes. Its seek times and throughput are average. Its plastic case is small. \$2,995. IDS, 2107 N. First St., Suite 280 Koll Bayshore Bldg., San Jose, CA 95131, (800) 733-0078. (Dec '90)

lomega Transportable 44

If you need maximum reliability in a removable-cartridge drive and don't mind its higher price, extra weight, and slower speed, this Bernoulli drive is an excellent portable-storage choice. It is best for data transport, storage, and backup rather than frequent spinning. Special cache capability improves speed. Works under MultiFinder, meaning that formatting can occur in the background. \$1,399. Iomega Corp., 1821 W. 4000 S., Roy, UT 84067. (800) 456-5522 or (801) 778-1000. (Feb '91)

La Cie 45 MB Removable

This SyQuest drive is solidly built and features an auto-switching power supply. Its powerful formatting software offers a variety of options. Silver Platter and Norton Utilities for Macintosh are bundled with it. \$799. La Cie, Ltd., 19552 S.W. 90th Ct., Tualatin, OR 97062. (800) 999-0143 or (503) 691-0771. (Feb '91)

La Cie 600R Magneto-Optical

The La Cie 600R Magneto-Optical is one of several solid erasable optical speed champs. Good access times. Its formatting software is optimized for fast SCSI performance. Includes Silverlining disk-management software.

\$4,149. La Cie, 19552 S.W. 90th Ct., Tualatin, OR 97062. (800) 999-0143 or (503) 691-0771. (Nov 90)

La Cie ZFP 400 tttt

The La Cie ZFP 400 is a highthroughput hard-disk drive with a capacity of 423 megabytes. Highly recommended for storing large database, graphics, sound, or animation files, because of its superior throughput and average seek times. It comes bundled with 5 megabytes of public-domain software, Silverlining disk-management software, and Norton Utilities for Macintosh for drive maintenance and repair. Of all the high-capacity drives, it's the price/ performance champ, its only flaw being internal termination. Support is good too. \$1,999. La Cie, 19552 S.W. 90th Ct., Tualatin, OR 97062. (800) 999-0143 or (503) 691-0771. (Dec 90)

MacLand SyQuest 42 megabyte \$\$\$

This SyQuest-based drive has shining performance and offers an inexpensive, fast storage alternative. Includes archiving and restoration utilities. Comes with a cartridge. \$514. MacLand, Inc., 4685 S. Ash Ave., Suite H5, Tempe, AZ 85282. (800) 333-3353 or (602) 820-5802. (Feb '91)

MacProducts Magic 380 \$\frac{1}{2}\frac{1}{2}\text{The MacProducts Magic 380 is a hard-disk drive with an actual capacity of 325 megabytes. Don't be tempted by the price of this relatively inexpensive drive. Its operation is quite slow, and it's difficult to set up, because of its software SCSI-ID detection, internal termination, and unshielded 25-pin SCSI connectors. \$1,395. MacProducts, 8303 Mopac Expy., #218. Austin, TX 78759. (800) 622-3475 or (512) 343-9441. (Dec '900)

MacTel Index 45 Removable

The MacTel Index 45 Removable is a SyQuest-based removable-cartridge unit (formerly known as the MacTel 45 Removable) that supports A/UX partitioning. Excellent software includes Back-Matic and AutoSave II. \$669. MacTel Technology Corp., 3007 N. Lamar, Austin, TX 78705. (800) 950-8411 or (512) 451-2600. (Feb '91)

MacTown DataStor HM44/ 25MR \$\$\frac{1}{2}\$

This SyQuest-based magnetic-disk-cartridge drive (formerly known as the Computer Products Data Stor DS44/25MR) includes only rudimentary software and documentation. On the positive side, it has a quiet fan. Includes cartridge. Plastic case. \$569. MacTown, 4657 MacArthur Ln., Boulder, CO 80303. (800) 338-4273. (Feb '91)

MacProducts USA Magic 45

####
The Magic 45 is one of the best

SyQuest drives available, offering high speed and high quality. Its documentation is somewhat outdated. \$499; cartridge, \$69. MacProducts USA, 8303 Mopac Expy., #218, Austin, TX 78759. (800) 622-3475 or (512) 343-9441. (Feb '91)

Mass Microsystems DataPak 45 tttt

This SyQuest magnetic-disk-cartridge drive includes excellent documentation. It's bundled with Disk Doubler. Includes two switched AC outlets. \$1,199. Mass Microsystems, \$10 W. Maude Ave., Sunnyvale, CA 94086. (800) 522-7979 or (408) 522-1200. (Feb. 201)

MicroNet Micro/Optical SB-SMO-1 1111

The Micro/Optical SB-SMO-1 erasable optical drive gets good marks for speed, enhanced by the drive's ability to turn off the verify pass while writing. Good access times. Includes ability to combine many discs into a single volume. \$4,995. MicroNet Technology, Inc., 20 Mason, Irvine, CA 92718. (714) 837-6033. (Nov '90)

MicroNet MR45 \$\$\$\$
The SyQuest-based MicroNet MR45 removable-cartridge drive is a good storage choice. It offers excellent documentation, very powerful software, and a well-shielded power supply. Its interface is one of the best available. With cartridge, \$995; with Retrospect Remote, \$1,195. MicroNet Technology, Inc., 20 Mason, Irvine, CA 92718. (714) 837-6033.

MicroNet MS-404 \$333
The MicroNet MS-404 is a hard-disk drive with a capacity of 423 megabytes. The custom-designed sturdy metal case has excellent workmanship. This unit is highly recommended for storing large database, graphics, sound, or animation files, because of its high throughput and average seek times. The only software that is bundled with the drive is a proprietary installation utility. \$3,795. MicroNet Technology, Inc., 20 Mason, Irvine, CA 92718. (714) 837-6033. (Dec '90)
Microtech N320 \$1344

Microtech N320 \$\$\$\$
The Microtech N320 is a hard-disk drive with a capacity of 330 megabytes. It has average seek times and throughput and comes in a small plastic case. Its software is good, as is support. \$2,299. Microtech International, Inc., 158 Commerce St., East Haven, CT 06512. (800) 626-4276 or (203) 468-6223. (Dec '90)

Microtech 0R650 \$\frac{444}{5}\$
This erasable optical drive's performance is slow. It comes with Total Recall software, which lets you perform unattended backups. It also includes Norton Utilities for Macintosh. \$4,795. Microtech International, Inc. 158 Commerce

#### MiniFinders

St., East Haven, CT 06512. (800) 626-4276 or (203) 468-6223. (Nov

Microtech R50 tttt The Microtech R50 is a Ricohbased removable-cartridge-drive speed champion. Of all the Ricohbased drives, the R50 is highly recommended, because of its excellent formatting software and useful utilities. Comes with two SCSI cables. With cartridge, \$1,299; extra cartridge, \$129. Microtech International, Inc., 158 Commerce St., East Haven, CT 06512. (800) 626-4276 or (203) 468-6223. (Feb '91)

Mirror MP290 ttt/2

The Mirror MP290 is a 291megabyte hard disk with slow seek times and low throughput. DIP switches. Comes in a large metal case. \$1,757. Mirror Technologies, 2644 Patton Rd., Roseville, MN 55113. (800) 654-5294 or (612) 633-4450. (Dec '90)

Mirror RM42 ttt

The SyQuest-based RM42 is a sturdy removable-cartridge-drive system in a metal case. It is bundled with QuicKeys, DiskTop, Mock-Package+, and 10 megabytes of public-domain software, \$677. Mirror Technologies, 2644 Patton Rd., Roseville, MN 55113. (800) 654-5294 or (612) 633-4450. (Feb

Mirror RM600 Optical ttt

The Mirror RM600 Optical's software allows manual sector mapping. It also includes an autoeject function at dismount or shutdown. Its performance is slow. \$3,497. Mirror Technologies, 2644 Patton Rd., Roseville, MN 55113. (800) 654-5294 or (612) 633-4450. (Nov '90) NEC Intersect CDR-35 \$\$\%

The Intersect CDR-35 is a portable CD-ROM drive that can also double as a portable CD player. Unfortunately it has many flaws, such as only one SCSI connector, no way of changing the SCSI address, and almost nonexistent documentation - and you can't stop the drive manually to remove a CD after a system crash. Look at the Toshiba portable CD-ROM drives instead. \$499. NEC Technologies, Inc., 1414 Massachusetts Ave., Boxborough, MA 01719. (800) 632-4636 or (508) 264-8000. (Sept '90) Neoteric Genesis 6000i **‡‡‡‡** 

This erasable optical drive (formerly available from MACsetra Technologies) features good speed and software. Other highlights include a fast erase function and a filtered fan. Includes the capability to combine many discs into a single volume. \$5,495. Neoteric Systems, Inc., 350 Second Ave., S. Saskatoon, Saskatchewan S7L 1L1, Canada. (800) 667-5488 or (306) 665-6000. (Nov '90)

Ocean Microsystems Tidalwave 650 tttt

The Ocean Microsystems Tidal-

wave 650 is a solid product, offering high speed and quality performance in an erasable optical drive. It includes MacTools Deluxe and a program that mounts Ocean drives on a SCSI bus. \$4,195. Ocean Microsystems, 246 E. Hacienda Ave., Campbell, CA 95008. (800) 262-3261 or (408) 374-8300. (Nov '90)

Ocean Totem IV 44MB ttt/2 This Bernoulli-based magneticdisk-cartridge drive features a

unique vertical metal case. Because of an extensive verification scheme, the drive's operation is a little slow. However, it's well designed and an excellent choice if reliability is your top priority. Comes with a cartridge. \$1,350; Totem IIID dual, \$2,350. Ocean Microsystems, Inc., 246 E. Hacienda Ave., Campbell, CA 95008. (800) 262-3261 or (408) 374-

8300. (Feb '91)

Optima MiniPak 310 \$\$\$\$ The Optima MiniPak 310 is a pricey 311-megabyte hard-disk drive featuring slow seek times. It has a small plastic case and good software. \$4,395. Optima Technology, 17526 Von Karman, Irvine, CA 92714. (714) 476-0515. (Dec '90)

**Pacific Microelectronics** PM1.44 Floppy Drive \$\$\$

The PM1.44 Floppy Drive is a floppy-disk drive for NeXT machines that can read and write DOS-formatted 720K, UNIX 1.4megabyte and Mac 1.4-megabyte disks. Nicely designed, with a shape that fits exactly beneath the NeXT cube. \$395. Pacific Microelectronics, 201 San Antonio Circle, C250, Mountain View, CA 94040. (800) 628-3475 or (415) 948-6200. (Oct '90) Pinnacle REO-650 \$\$\\\^2

The Pinnacle REO-650 is an erasable optical drive with average speed, but new cache software should improve performance. It has an A/UX option and a voltage selector but only a few utilities. \$4,695. Pinnacle Micro, 15265 Alton Pkwy., Irvine, CA 92718. (800) 553-7070. or (714) 727-3300. (Nov '90)

PLI Infinity Optical \$\$\$\$

The PLI Infinity Optical is among the five fastest erasable optical drives. Its A/UX option allows 1,024 bytes to be allocated to a sector. It includes the TurboSpool print spooler and a vertical stand. \$5,695. PLI, 47421 Bayside Pkwy., Fremont, CA 94538. (800) 288-8754 or (415) 657-2211. (Nov '90)

PLI PL320F Turbo \$\$\$\$

The PLI PL320F Turbo is a 320megabyte hard-disk drive that had some of the fastest seek times of the drives we tested. It has only average throughput. It comes in a large metal case, and customer support is good. \$4,395. PLI, 47421 Bayside Pkwy., Fremont, CA 94538. (800) 288-8754 or

(415) 657-2211. (Dec '90)

**PLI Infinity 40** Turbo Enhanced tttt

This SyQuest-based unit (formerly known as the Infinity 40 Turbo) is an outstanding choice in magnetic-disk-cartridge drives, offering excellent formatting software, useful utilities, and some great programs for automating backup. \$1,199. PLI, 47421 Bayside Pkwy., Fremont, CA 94538. (800) 288-8754 or (415) 657-2211 (Feb

Procom MD 320 1111

The Procom MD 320 is a 323megabyte hard-disk drive that features fast seek times and high throughput. \$3,295. Procom Technology, 200 McCormick Ave., Costa Mesa, CA 92626. (714) 549-9449. (Dec '90) Procom MEOD650 \$\$\$\$

This erasable optical drive is very slow. It has 25-pin SCSI connectors and comes with Retrospect backup software, \$4,495. Procom Technology, Inc., 200 McCormick Ave., Costa Mesa, CA 92626. (714) 549-9449. (Nov '90)

RACET Cosmos SA600MO-II ttt

This erasable optical drive can perform an unattended backup with an archive log but has slow performance. The included software can combine many discs into a single volume. \$4,795. RACET computes, 3150 Birch St., Brea, CA 92621. (714) 579-1725. (Nov '00'

RACET SA350 \$\$\$\$

The RACET SA350 is a 349megabyte hard-disk drive. It features some of the fastest seek times among comparable drives, but has only average throughput. \$3,115. RACET computes, 3150 Birch St., Brea, CA 92621. (714) 579-1725. (Dec '90)

Relax Hard 300 Plus ###

The Relax Hard 300 Plus is a 291megabyte hard-disk drive with average seek time and throughput. Has a switched power center. \$2,679. Relax Technology, 3101 Whipple Rd., Union City, CA 94587. (800) 848-1313 or (415) 471-6112. (Dec '90)

Relax Mobile 42 \$\$\$1/2

The Mobile 42 is a SyQuest-based magetic-disk-cartridge drive. Includes an auto-switching power supply and a built-in surge protector. The formatting software is powerful but difficult to use. Very quiet fan. Comes with a cartridge. \$529. Relax Technology, Inc., 3101 Whipple Rd., Union City, CA 94587. (800) 848-1313 or (415) 471-6112. (Feb '91)

Relax Optical 600 Plus ttt/2 The compact Relax Optical 600 Plus is an erasable optical drive with built-in power control, surge protection, and noise filtering. \$4,399. Relax Technology, 3101 Whipple Rd., Union City, CA 94587. (800) 848-1313 or (415) 471-6112. (Nov '90)

Rodime R45 Plus #1/2

This SyQuest removable-cartridge drive lacks extra features and comes in a flexible plastic case. Its speed is a plus. \$1,399. Rodime Systems, Inc., 901 Broken Sound Pkwy. N.W., Boca Raton, FL 33487. (800) 688-9390 or (407) 994-5585. (Feb '91)

Rodime Systems Cobra 330e tttt

The Rodime Systems Cobra 330e is a 345-megabyte hard-disk drive with slow seek times and average throughput. Two AC outlets are located on the back. \$3,990. Rodime Systems, 901 Broken Sound Pkwy. N.W., Boca Raton, FL33487.(800)688-9390 or (407)

994-5585. (Dec '90) Ruby Systems StarDrive 45RX ttt

The SyQuest-based StarDrive is a little slow and a little pricey. It includes excellent documentation and an extensive troubleshooting guide. It has a metal case, \$995. Ruby Systems, Inc., 930 Thompson Pl., Sunnyvale, CA 94086. (800) 888-1668 or (408) 735-8668. (Feb '91)

Storage Dimensions MacinStor MCE 880-HC1 tttt/2

The MacinStor MCE 880-HC1 (formerly known as the Macin-Stor) offers the largest storage capacity - 1 gigabyte - available. It features an outstanding read rate, making it ideal for readintensive applications. The nonstandard format that gives it 1gigabyte capacity can't be read by other drives, however, so don't plan to use cartridges with this format in other manufacturers' drives. In standard mode, the MacInStor can format, read, write, and erase a 650-megabyte cartridge, but its performance suffers when it uses this type of cartridge. Package includes Retrospect backup software. \$7,995. Storage Dimensions, 2145 Hamilton Ave., San Jose, CA 95125. (408) 879-0300. (Nov '90)

Storage Dimensions 325-S1 ttttt

The Storage Dimensions 325-S1 is a high-throughput, superquick 326-megabyte hard-disk drive with excellent seek times. Highly recommended as a network server. It has a large custom plastic case the front pops off to reveal that the unit is prewired to accept a second mechanism in the same housing. This is a nice option if you need to add more storage capacity in the future. \$3,499. Storage Dimensions, 2145 Hamilton Ave., San Jose, CA 95125. (408) 879-0300. (Dec '90)

Sumo SSER 50 Removable

The Sumo SSER50 is a slow Ricoh-based removable-cartridge drive that comes in a sturdy metal case. It supports A/UX partitions and provides unlimited data storage in 50-megabyte increments. Good documentation. \$1,300. Sumo Systems, 1580 Old Oakland Rd., Suite C-103, San Jose, CA 95131. (408) 453-5744. (Feb '91)

Sumo Systems RSSM600-B

The Sumo RSSM600-B is a slow erasable optical drive with meager software. Its default format is not ISO. Includes an Option-key sequence to format it as ISO standard. \$4,300. Sumo Systems, 1580 Old Oakland Rd., Suite C-103, San Jose, CA 95131. (408) 453-5744. (Nov '90)

SuperMac DataFrame XP330

The SuperMac DataFrame XP330 is a 322-megabyte hard-disk drive that has slow seek times and average throughput. Its software is good. \$3,599. SuperMac Technology, 485 Potrero Ave., Sunnyvale, CA 94086. (408) 245-2202. (Dec '90)

Technology Works 3-Meg Static RAM Card \$\$\$\$\$

The 3-MB Static RAM Card is an excellent - even necessary addition to every Macintosh Portable. It uses no extra power and allows maximum operating speed. In a side-by-side comparison, the Mac equipped with the static RAM ran slightly faster and the battery lasted longer in Sleep mode. Easy to install and has a lifetime warranty. Requires Mac Portable. \$995. Technology Works, 4030 Braker Lane W Suite 350, Austin, TX 78759. (800) 688-7466 or (512) 794-8533. (Oct '90)

Tecmar DATaVault \$\$\$\$

DATaVault is a backup unit that uses a Wangtek 4-millimeter DAT unit and can hold I gigabyte of data. \$4,995. Tecmar, 6225 Cochran Rd., Solon, OH 44139. (216) 349-0600. (July '90)

Tecmar THS-2200 tttt

The THS-2200 is a tape-backup unit whose average transfer rate is 129.21K per second. \$6,995. Tecmar, 6225 Cochran Rd., Solon, OH 44139. (216) 349-0600. (July

Third Wave 45R \$\$\$1/2

The Third Wave 45R is a SyQuest removable-cartridge drive that comes with an auto-switching power supply. It's bundled with Fontina utilities, 12 megabytes of shareware, and HyperDeck. \$629. Third Wave Computing, Inc., 1826-B Kramer Ln., Austin, TX 78758. (800) 284-0486 or (512) 832-8282. (Feb '91)

Toshiba XM-3201 A1 MAC tttt/2

Toshiba's XM-3201 A1 MAC is a very solidly built unit that uses a fast drive mechanism. Fast, exceptional performance. No power indicator. \$970. Toshiba, Irvine Blvd., Irvine, CA 92718. (800) 334-3445 or (714) 583-3000. (Mar '90)

Total Peripherals TP-44R ###

The TP-44R offers speed at a reasonable price. Includes an autoswitching power supply. Documentation is rudimentary, and the fan is noisy. \$799. Total Peripherals, Inc., 1 Brigham St., Marlboro, MA 01752. (508) 460-0764. (Feb

Univation Q50 tt/2

The Q50 is a Ricoh-based magnetic-disk-cartridge drive. Has rudimentary software. The fan can scrape if the power cable is stressed because of poor positioning. Processing is somewhat slow. \$1,395. Univation, 600 Valley Way, Milpitas, CA 95035. (408) 263-1200. (Feb '91)

Xyxis XY600RW ttt
The Xyxis XY600RW is an erasable optical drive with very slow performance. Its bundled software includes dynamic partitioning. \$5,245. Xyxis, 14631 Martin Dr., Eden Prairie, MN 55344, (612) 949-2388. (Nov '90)

OUTPUT DEVICES Agfa P3400PS \$\$1/2

The high-end 400-dpi Agfa P3400PS PostScript laser printer is one of the fastest models available but earns poor marks in image quality. This 12-ppm workhorse has two standard trays for 250 sheets each. Includes 20megabyte hard-disk drive that contains 60 of its 73 fonts. The remaining 13 are stored in ROM. \$9,995. Agfa Compugraphic, 200 Ballardvale St., Wilmington, MA 01887. (800) 227-2780 or (508) 658-5600. (Oct '90)

Apple ImageWriter LQ Printer

The Apple ImageWriter LQ produces letter-quality text and graphics at 216 dpi in as many as seven colors (using an optional ribbon). It is limited to four fonts in 12 sizes. Networkable. Printer driver, version 2.0. Requires 1 megabytes of RAM. \$1,399. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014. (800) 776-2333 or (408) 996-1010. (Jan '89)

Apple LaserWriter IINT ttt

The 300-dpi, 8-ppm PostScript LaserWriter IINT is beginning to show its age in price and performance. This midpriced PostScript laser printer is faster than the LaserWriter Plus and produces blacker blacks. Too slow for net-works. \$4,499. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014. (800) 776-2333 or (408) 996-1010. (Oct '90)

Apple LaserWriter IINTX ttt This 300-dpi, 8-ppm PostScript laser printer sets the standard for price and performance. Its 68020 chip makes it very speedy. It is expandable to 12 megabytes, and a SCSI hard-disk drive can be attached for fonts. Lacks paperfeed options. \$5,999. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, (800) 776-2333 or (408) 996-1010. (Oct '90)

Apple Personal LaserWriter NT 1111

This laser printer has a large paper tray, an attractive design, and decent speed. \$3,299. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, (800) 776-2333 or (408) 996-1010. (Oct '90) Apple Personal

LaserWriter SC tttt

The Apple Personal LaserWriter SC is a 300-dpi QuickDraw printer that produces near-laser-printer quality at a bargain price. For simple graphics and text output, it rivals the quality of higher-priced PostScript printers. Easy-to-use, well-designed toner cartridge. \$1,999; Personal LaserWriter IINT board upgrade, \$1,300. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014. (800) 776-2333 or (408) 996-1010. (Nov '90)

CalComp PlotMaster 5902A

The CalComp PlotMaster 5902A color thermal-wax-transfer printer is one of the slowest on the market. Its print quality is mediocre, and its color gradation is poor. Optional parallel interface and plotter emulation. Requires CA-Cricket Expression driver, \$5,595. CalComp, 2411 W. La Palma Ave., Anaheim, CA 92801. (800) 225-2667. or (714) 821-2000. (May '90)

CoStar LabelWriter tttt

The LabelWriter is a tiny thermal printer that prints labels one at a time. You can set font, size, style, and justification, but these attributes apply to the entire label. A memory feature lets you easily store commonly used labels for quick retrieval. Chooser-selectable drive is promised for future versions. This is an addictive and time-saving device. It comes with two Casady & Greene fonts and one roll of labels; CoStar sells additional rolls for about 5 cents a label. Requires Mac Plus or later. \$249.95. CoStar Corp., 22 Bridge St., Greenwich, CT 06830. (800) 426-7827 or (203) 661-9700. (May '90)

Dataproducts LZR 1260i

This 300-dpi, 12-ppmPostScript laser printer is an ideal business printer. Its overall speed is rivaled only by that of the Apple Laser-Writer IINTX and the QMS-PS 810 Turbo, but for straight text output, its 12-ppm engine gives it the edge. It produces image quality that is consistently above average in its class. The LZR 1260i has a 250-page paper tray and offers a myriad of paper-handling options. It has a parallel interface in addition to serial and LocalTalk ports, which makes it well suited to PC/Mac mixed-platform envi-ronments. \$5,995. Dataproducts,

6200 Canoga Ave., Woodland Hills, CA 91367. (818) 887-8000. (Oct '90)

Eastman-Kodak XL7700 Digital Continuous Tone Printer tttt/2

The XL7700 is a color printer whose output is so good that it looks like original photos. This unit sets a new standard for color printing. Its dye-sublimation process makes continuous-tone prints. The only drawback is the high cost of the printer and print-ing media. \$24,895. Eastman-Kodak, 343 State St., Rochester, NY 14650. (800) 445-6325. (Jan '91) \* '90 Eddy

Fujitsu RX7100PS+ ttt Fujitsu's RX7100PS+ is a 300dpi, 5-ppm laser printer that has faster performance than an Apple LaserWriter IINT, but is still too slow to accommodate networks comfortably. Includes two paper bins and QuickLetter and Select-A-Bin software, \$3,995. Fujitsu America, 3055 Orchard Dr., San Jose, CA 95134. (408) 432-1300. (Oct '90)

GCC PLP IIS \$\$\$\$1/2

One of the best laserlike personal printers, the GCC PLP IIS features excellent image quality and speedy output. For simple graphics and text output, it rivals higher-priced PostScript printers. It's sturdily built and includes good bundled software and outline fonts. Can be upgraded to PostScript. \$1,899. GCC Technologies, 580 Winter St., Waltham, MA 02154. (800) 422-7777 or (617) 890-0880. (Nov '90)

GCC WriteImpact \$\$\$\$ This dot-matrix impact printer produces near-letter-quality output. It includes 25-to-400 percent enlargement and reduction, print preview, smoothing, and kerning features. It's excellent at paper handling, offering both push and pull tractor feed as well as friction feed. Adobe and Bitstream fonts are supported. Performance is very equaling that of the ImageWriter LO without the high price. The only major drawback with this printer is that it's a serial device with no networkable AppleTalk version. GCC Technologies, Inc., 580 Winter St., Waltham, MA 02154. (800) 422-7777 or (617) 890-0880. (June

GCC WriteMove \$\$\$

The three-pound WriteMove is one of the smallest, lightest Mac printers available. It's an inkiet unit that produces resolutions of up to 192 dpi. It can run off rechargeable batteries or AC and comes with a good selection of Bitstream fonts. Printing quality varies widely, depending on the paper and ink used. Version 1.0 reviewed; printer driver version 1.3 shipping, Requires Mac Plus or later and a hard-disk drive. \$549. GCC Technologies, Inc., 580

#### MiniFinders

Winter St., Waltham, MA 02154. (800) 422-7777 or (617) 890-0880. (Apr '89)

Hewlett-Packard DeskWriter

The compact, light DeskWriter is the Mac version of HP's DOScompatible inkjet printer, a highquality personal printer with a nice price. For simple graphics and text output, it rivals higher-priced PostScript printers. Complicated graphics can cause pages to become oversaturated with ink. \$995. Hewlett-Packard, 19091 Pruneridge Ave., Cupertino, CA 95014. (800) 752-0900 or (408) 725-8900. (Nov '90)

Hewlett-Packard LaserJet III

For less money than a LaserWriter IINT costs, the 300-dpi, 8-ppm LaserJet III produces text resolution that almost rivals that of higher-resolution printers.
PostScript cartridge includes ATM font rasterizer and 35 outline fonts. \$2,395; PostScript option, \$695; Mac interface, \$275. Hewlett-Packard, 19091 Pruneridge Ave., Cupertino, CA 95014. (800) 752-0900 or (408) 725-8900. (Oct '90)

Hewlett-Packard LaserJet IID

The 300-dpi, 8-ppm Hewlett-Packard LaserJet IID is the ultimate paper handler, offering everything from two paper bins (each with a 200-sheet capacity) to automatic printing on both sides of a page. The IID could use a more powerful processor but is a contender in the corporate market. PostScript cartridge includes ATM font rasterizer and 35 outline fonts. Optional upgrade includes 2 megabytes of RAM, PostScript, and LocalTalk. \$2,800; Mac interface, \$275. Hewlett-Packard Peripherals Group, 16399 W. Bernardo Dr., San Diego, CA 92127. (408) 725-8900. (Oct '90) Hewlett-Packard LaserJet IIP

The low-priced, 300-dpi LaserJet IIP, with its 4-ppm Canon LBP-LX engine, is too slow for Mac PostScript printing. PostScript cartridge includes ATM font rasterizer and 35 outline fonts. \$2,800; Mac interface \$275. Hewlett-Packard Peripherals Group, 16399 W. Bernardo Dr., San Diego, CA 92127.(408) 725-8900. (Oct '90)

Hewlett-Packard PaintJet \*\*\* HP's color inkjet printer is slow, and its image quality is below average. Limited color range but convenient ink cartridges. Requires Mac Printkit. \$1,395; Mac Printkit, \$125. Hewlett-Packard, 19091 Pruneridge Ave., Cupertino, CA 95014. (800) 752-0900 or (408) 725-8900. (May '90) Hewlett-Packard PaintJet XL

The Hewlett-Packard PaintJet XL

has low-resolution QuickDraw (180 dpi) quality but produces good-looking output. Not all colors can be reproduced. It's fast. Paper handling is good, and it can handle B-sized sheets. \$2,495; MacPrintkit, \$125. Hewlett-Packard 19091 Pruneridge Ave., Cupertino, CA 95014, (800) 752-0900 or (408) 725-8900. (May

Kyocera Q-8010 ttt

This 300-dpi, 10-ppm PostScriptclone printer is fast with text but slow with graphics, making it a good choice for users who are interested in speedy output of word-processing documents or spreadsheets. It can receive data through three active ports rial, parallel, and LocalTalk simultaneously. The Kyocera accepts PostScript or PCL, which is nice for mixed PC/Mac networks. Intelligent port and emulation switching. \$6,995; legal-size-pa-per tray, \$95. Kyocera Unison, 1321 Harbor Bay Pkwy., Alameda, CA 94501. (415) 748-6680. (Oct '90)

Lasergraphics CPS ttt

This QuickDraw-based color thermal-wax-transfer printer features speedy output but only mediocre print quality and low dpi. Includes MacRascol. \$7,495. Lasergraphics, 20 Ada Ave., Irvine, CA 92718. (714) 727-2651. (May '90)

LaserMAX 1000 Personal Typesetter \$\$

This 8-ppm PostScript-clone laser printer claims resolutions as high as 1,000 dpi. It has aboveaverage performance, but also has some PostScript-compatibility problems. Requires Mac II series. \$7,995. LaserMAX Systems, 7150 Shady Oak Rd., Eden Prairie, MN 55344. (612) 944-9085. (Oct '90)

MacProducts MagicPrint \$\$\$\% This 300-dpi, 6-ppm personal PostScript clone is a good buy if you don't need Type 1 compatibility. It is among the fastest performers in handling graphics files. Liquid-crystal-shutter engine produces good image quality. \$2,997. MacProducts USA, Inc., 8303 Mopac Expy., Suite 218, Austin, TX 78759. (800) 622-3475 or (512) 343-9441. (Oct '90)

Mirror Technologies Mirror

Image \$\$\$1/2

This 300-dpi, 6-ppm PostScriptclone printer is a good buy if you don't need Type 1 compatibility. Among the fastest performers in handling graphics files. Liquidcrystal-shutter engine produces good image quality. \$2,997. Mirror Technologies, Inc., 2644 Patton Rd., Roseville, MN 55113. (800) 654-5294 or (612) 633-4450. (Oct '90)

Mitsubishi G370-10 tt1/2

This compact QuickDraw-based color thermal-wax-transfer printer features excellent image quality

but lacks a hardware/software interface. \$5,995. Mitsubishi Electronics America, 991 Knox St., Torrance, CA 90502. (213) 217-5732. (May '90)

Mitsubishi Shinko CHC-345

This product's most distinguishing characteristic is its excellent image quality. Unfortunately, limited color range and belowaverage resolution mar an otherwise-nice OuickDraw-based color thermal-wax-transfer printer. \$6,000. Mitsubishi International Corp., 701 Westchester Ave., White Plains, NY 10604. (914) 997-4999. (May '90) Mitsubishi S340-10 \$\$\$\$\$

The beautiful prints produced by Mitsubishi's QuickDraw-based color dye-sublimation printer make this printer the clear choice for the color-proofing crowd. Excellent gradation. Mediocre color range. Lacks hardware/software interface. \$13,995. Mitsubishi Electronics America, 991 Knox St., Torrance, CA 90502. (213) 217-5732. (May '90)

**NEC Silentwriter LC 890XL** 

11/2

This 300-dpi, 8-ppm PostScript printer is fast and flexible but produces poor-quality images due in part to its LED engine. Includes two 250-sheet paper bins. \$5,995. NEC Technologies, Inc., 1414 Massachusetts Ave., Boxborough, MA 01719. (800) 632-4636 or (508) 264-8000. (Oct '90)

NEC Silentwriter2 290 ttt

This 300-dpi, 8-ppm personal PostScript laser printer boasts a compact design and some of the fastest processing speed for printers in its class. It's not, however, less noisy than its peers, despite its name. \$4,495. NEC Technologies, Inc., 1414 Massachusetts Ave., Boxborough, MA 01719. (800) 632-4636 or (508) 264-8000. (Oct '90)

NewGen TurboPS/480 tt/2

This 8-ppm PostScript-clone printer features turbocharged resolution (800 x 400 dpi) and excellent image quality. It has some PostScript-compatibility problems but lots of potential. \$7,495. NewGen Systems Corp., 17580 Newhope St., Fountain Valley, CA 92708. (714) 641-8600. (Oct '90)

Océ Graphics 5232 CPS
Color PS \$\frac{1}{2}\text{1}

This 300-dpi color PostScript thermal-wax transfer printer features a wide color gamut and high text resolution. Precise and clear when printing text or hairlines but less competent with color gradation. Uses plastic ink. \$15,990. Océ/Schlumberger Graphics, 385 Ravendale Dr., Mountain View, CA 94039. (800) 537-7568 or (415) 964-7900. (May '90) PrintWare 720 IQ Professional

Laser Imager \$\$\$ PrintWare's 720 IQ Professional Laser Imager produces excellentquality images. Of the high-resolution clone printers, it is the most compatible with PostScript, but it's very slow. \$11,990. Printware, 1385 Mendota Heights Rd., Minneapolis, MN 55120. (800) 456-1400 or (612) 456-1400. (Oct '90)

**OMS ColorScript 100** Model 10 ttt

Simple to install and use, the QMS ColorScript thermal-wax-transfer PostScript printer features good print quality and speedy output. Excellent software. \$8,995. QMS, Inc., One Magnum Pass, Mobile, AL 36689. (800) 523-2696 or (205) 633-4300. (May '90) \* '89

QMS PS-410 Turbo tttt/2

This low-priced personal printer leads the way in innovation and bang for buck. It features an extremely fast processing capability and provides an ideal solution for mixed-platform environments, in that it can accept data from all three ports simultaneously and automatically switch among printer languages. \$2,795. QMS, Inc., One Magnum Pass, Mobile, AL 36689. (800) 523-2696 or (205) 633-4300. (Mar '91) ★ '90 Eddy

QMS PS-810 Turbo \$\$\$\$

The 300-dpi, 8-ppm QMS PostScript laser printer ranks high on speed charts, processing good-quality graphics faster than comparable printers. Includes parallel interface. RAM-expansion capability up to 3 megabytes. \$5,495. QMS, Inc., One Magnum Pass, Mobile, AL 36689. (800) 523-2696 or (205) 633-4300. (Oct '90)

QMS PS-820 turbo tttt Less expensive and faster than the Apple LaserWriter IINTX, the OMS-PS 820 Turbo is a 300-dpi PostScript printer whose average speeds surpass those of the IINTX by 11 percent and its print quality is as good, if not better. Dual trays. \$6,495. QMS, Inc., One Magnum Pass, Mobile, AL 36689. (800) 523-2696 or (205) 633-4300. (May '90)

Seiko CH-5504 \$\$\$

This QuickDraw-based color thermal-wax-transfer printer features good color range, but poor line resolution. It is compact but slow. Can handle a large print area. Bundled with ATM, Plus Pack, and TypeAlign. \$7,000 -\$9,000. Seiko Instruments USA, Inc., 1150 Ringwood Ct., San Jose, CA 95131. (800) 888-0817 or (408) 922-5800. (May '90)

Sharp JX-730 Color Ink Jet

This color inkjet QuickDrawbased printer is slow and produces mediocre print quality with low resolution. Color range is good, but it processes only hand-fed paper and does not print transparencies. Can print on large paper sizes. The unit is noisy and shaky. \$2,195. Sharp Electronics,

Sharp Plaza, Mahwah, NJ 07430. (201) 529-8200. (May '90)

Tektronix ColorQuick ttt The ColorQuick 216-dpi Quick-Draw inkjet printer is fast enough for everyday use, has a good range of paper-feed options, and provides extremely high resolution for an inkjet printer. Bright, vivid colors are supported by TekColor, Tektronix's screen-to-pagematching process. Requires Mac interface kit. \$2,345; Mac interface kit, \$150. Tektronix, Inc., P.O. Box 1000, Mail Station 63-630, Wilsonville, OR 97070. (800) 835-6100. (May '90) Tektronix 4693DX

Color Image 11/2

This QuickDraw-based colorthermal-wax-transfer printer boasts a color range that surpasses that of most other printers. Its driver needs improvement. Optional connection to four Macs. Requires Mac interface kit. \$8,995; Mac interface kit, \$495. Tektronix, Inc., P.O. Box 1000, Mail Station 63-630, Wilsonville, OR 97070. (800) 835-6100. (May

**Texas Instruments** microLaser PS35 \$\$\$\$\%

The 33.5-pound, 300-dpi, 6-ppm microLaser PS35 PostScript laser printer consistently surpasses the LaserWriter IINT in terms of speed and image quality. The combination of elegant design and small size make this printer a good value. \$2,999. Texas Instruments, 12501 Research Blvd., Austin, TX 78769. (800) 847-2787 or (512) 250-7111. (Oct '90)

Varityper VT600P tttt

This 600-dpi, 12-ppm industrial-strength PostScript laser printer features exceptional image quality. For straight text output, it's also one of the fastest laser printers available. It's slightly slower than the IINT and IINTX in outputting page-layout documents, because of its 600-dpi resolution. Although pricey, it's a viable unit for producing camera-ready PostScript when less-than-magazine quality is acceptable. \$16,995. Varityper, 11 Mt. Pleasant Ave., East Hanover, NJ 07936. (201) 887-8000. (Oct '90)

#### PERFORMANCE ENHANCERS

Aox DoubleTime-16

This 16-megahertz 68000-based accelerator features low cost, modest performance increase, and simple installation. Good choice for users on a tight budget. For Mac SE. Without FPU, \$395; with FPU, \$545. Aox, Inc., 486 Totten Pond Rd., Waltham, MA 02154. (800) 232-1269 or (617) 890-4402. (Aug '90)

Apple Macintosh IIci Upgrade

This 25-megahertz 68030-based

accelerator boosts the IIcx's performance by a third. Requires 80nsec or faster RAM SIMMs. For Mac IIcx. \$2,399. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014. (800) 776-2333 or (408) 996-1010. (Aug

Apple Macintosh Ilfx Upgrade \*\*\*

Apple's 40-megahertz 68030based accelerator board outperforms add-ons for a reasonable cost. Features SRAM cache, fast DMA SCSI. Special IIfx RAM must be purchased (at least 4 megabytes). This accelerator is recommended for best performance for Mac II and IIx owners. Requires 4 megabytes of DRAM. \$2,999; with DRAM, \$3,998. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014. (800) 776-2333 or (408) 996-1010. (Aug '90) Apple Macintosh IIx Upgrade

Unlike the IIfx upgrade, this accelerator uses normal Mac II RAM. This pricey 68030 and 68882 upgrade offers PMMU capability and a small speed increase; consider buying a cache card and a PMMU instead. For Mac II. \$2,199. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014. (800) 776-2333 or (408) 996-1010. (Aug '90)

Apple Macintosh SE/30 Upgrade \$\$\$\$\%

The best choice for turbocharging the Mac SE is Apple's SE/30 upgrade, which gives you Macintosh IIx performance. This 16-megahertz 68030-based accelerator board features color OuickDraw, stereo sound, and 8 megabytes of RAM. It's a clear performance winner over other SE-accelerator options, except in maximum speed. FDHD option recommended. For Mac SE. \$1,699; with FDHD option, \$2,198. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014. 800) 776-2333 or (408) 996-1010. (Aug

DayStar FastCache Ilci ttt/2 The FastCache IIci is a speedy upgrade that requires no software. The card fits into the IIci processor-direct slot. It has 64K of 25nsec static RAM that increases the IIci's performance between 5 and 40 percent. SANE patch provided for extra speed; INIT/cdev provided disables cache. For Mac Hci. \$379. DayStar Digital, Inc., 5556 Atlanta Hwy., Flowery Branch, GA 30542. (800) 962-2077 or (404) 967-2077. (Aug

DayStar 25MHz PowerCard 030 II ttt

Speed up your Mac II by up to 60 percent with this top-notch fullfledged accelerator board. The IIcx requires a \$49 CPU-socket upgrade for soldered-in CPUs. For Mac II, IIx, or IIcx. \$1,499; Without FPU, for IIcx, \$1,999. DayStar Digital, Inc., 5556 Atlanta Highway, Flowery Branch, GA 30542. (800) 962-2077 or (404) 967-2077. (Aug '90)

DayStar 33MHz PowerCard 030 II tttt

This accelerator is a faster Power-Card for a little more money. Same design and features as 25-megahertz version. For Mac II, IIx, or IIcx. Without FPU, \$1,699; for IIcx without FPU, \$2,199. DayStar Digital, Inc., 5556 Atlanta Hwy., Flowery Branch, GA 30542. (800) 962-2077 or (404) 967-2077. (Aug

DayStar 40MHz PowerCard 030 II tttt

This accelerator is an even faster PowerCard for even more money. Same design and features as 25megahertz version. For Mac II, IIx, or IIcx. Without FPU, \$1,899; for IIcx without FPU, \$2,399. DayStar Digital, Inc., 5556 Atlanta Hwy., Flowery Branch, GA 30542. (800) 962-2077 or (404)

967-2077. (Aug '90) DayStar 50MHz PowerCard 030 II tttt

Increase Mac performance by 130 percent with the 50MHz Power-Card 030 II. This board is almost as fast as the IIfx and it uses standard Mac II RAM SIMMs. For Mac II, IIx, or IIcx. \$2,599: for IIcx without FPU, \$3,099. DayStar Digital, Inc., 5556 Atlanta Hwy., Flowery Branch, GA 30542. (800) 962-2077 or (404) 967-2077. (Aug '90)

Dove MaraThon MSE3 tttt This 68020-based 16-megahertz

accelerator features a clean, simple design with few components. Easy to install. A faster 68030 version is available. For Mac SE. Without FPU, \$699; with FPU, \$999. Dove Computer Corp., 1200 N. 23rd St., Wilmington, NC 28405. (800) 622-7627 or (919) 763-7918. (Aug

Dove MaraThon Racer tttt

The MaraThon Racer is an inexpensive and easy way to get more performance from a Mac II. It supplies a cache of 32K of highspeed static RAM that increases performance an average of 15 percent. It can be somewhat difficult to install, because the Mac's CPU 68020 must be moved onto the accelerator board. Supports Mac II. \$259. Dove Computer Corp., 1200 N. 23rd St., Wil-mington, NC 28405. (800) 622-7627 or (919) 763-7918. (Aug

Dove MaraThon 030/SE30 \$\$\$1/2

Simple, small, low-cost accelerator board features 68030 with twice the SE/30's clock speed (32 megahertz). This memory cache must be disabled when you format floppy disks. For Mac SE/30. \$799. Dove Computer Corp., 1200 N. 23rd St., Wilmington, NC 28405. (800) 622-7627 or (919) 763-7918. (Aug '90)

Dove MaraThon 030/II ‡‡‡‡

This simple, small accelerator board includes a 68030 with twice the Mac II's normal speed (32 megahertz). It gives your Mac a 40 percent increase for a modest price. The memory cache must be disabled when you format floppy disks. For Mac II, IIx. \$799. Dove Computer Corp., 1200 N. 23rd St., Wilmington, NC 28405. (800) 622-7627 or (919) 763-7918. (Aug

MacProducts '030 RailGun-25MHz \$\$\$1/2

This 25-megahertz 68030-based accelerator features the same basic design as the Novy Quik30/ Plus-33MHz. SCSI expansion ports for 128K and 512K Macs, \$69. Without FPU, \$799; with FPU, \$999. MacProducts USA, Inc., 8303 Mopac Expy., #218, Austin, TX 78759. (800) 622-3475 or (512) 343-9441. (Aug '90) Newer Technology

MacSElerator tttt

This 16-megahertz 68000-based accelerator is a good value and performed well in our lab tests. For Mac SE. Without FPU, \$295; with FPU, \$505. Newer Technology, 1117 S. Rock Rd., Wichita, KS 67207. (800) 678-3726 or (316) 685-4904. (Aug '90)

**Novy Systems** Quik30/Plus-33MHz ttt/2

This accelerator gives you IIci computing power in a Plus. For 128K, 512K, Plus, and SE. SCS1 port 128K and 512K Macs, \$99. Without FPU, \$1,495; with FPU, \$1,994 Navy Systems, 1962. \$1,994. Novy Systems, 1862 Fern Palm Dr., Edgewater, FL 32141. (904) 427-2358. (Aug '90) Orchid MacSprint II \$\$\$\$\$

This 25-megahertz 68030-based accelerator is a quick and easy way to speed up your Mac II. Simple upgrade offers moderate increase for little money. A cdev disables cache in case of incompatible software. For Mac II. \$229. Orchid Technology, 45365 Northport Loop W., Fremont, CA 94538. (415) 683-0300. (Aug '90)

Radius Accelerator 16 Plus 111/2

Installation of this 16-megahertz 68020-based accelerator is complex, so it's best left to the dealer. Limited SCSI throughput but Silverlining 5.2 software helps. For Mac Plus. \$795; with FPU, \$1,095. Radius, Inc., 1710 Fortune Dr., San Jose, CA 95131. (800) 227-2795 or (408) 434-1010. (Aug '90)

Radius Accelerator 16 SE

This 16-megahertz 68020-based accelerator is simple to install. Easy configuration via the Control Panel or startup dialog box. For Mac SE. Without FPU, \$795; with FPU, \$1,095. Radius, Inc., 1710 Fortune Dr., San Jose, CA 95131. (800) 227-2795 or (408) 434-1010. (Aug '90)

#### MINIFINDERS

Radius Accelerator 25 SE

Like the 16-megahertz Radius accelerator, the 25-megahertz version includes a 68882 FPU for faster performance. Easy configuration via the Control Panel or startup dialog box. For Mac SE. Without FPU, \$1,395; with FPU, \$1,895. Radius, Inc., 1710 Fortune Dr., San Jose, CA 95131. (800) 227-2795 or (408) 434-1010. (Aug '90)

RasterOps ClearVue/SE tttt

This 68000-based, 16-megahertz accelerator doubles the speed of the SE and provides extra RAM. It requires that the Mac RAM and ROM be relocated to the accelerator. Includes an optional 19inch, 1,024-x-768-pixeltwo-page monochrome display and a video interface for two-page monitor or Apple Portrait Display. For SE. RasterOps Corp., 2500 Walsh Ave., Santa Clara, CA 95051. (408) 562-4200. (Aug '90) Siclone Si3033 \$\$\frac{1}{2}\frac{1}{2

This 68030-based, 33.3-megahertz accelerator is a speedy upgrade for the II or IIx. Retains older CPU to allow operation in the original unaccelerated mode. An INIT is provided to ensure proper floppy operation. For Mac II, IIx. Without FPU, \$1,799; with FPU, \$1,999. Siclone Sales and Engineering, 107 Bonaventura Dr., San Jose, CA 95134. (800) 767-8207 or (408) 263-8207. (Aug

Siclone Si3050 tttt

A true speed champ, this 68030-based, 50-megahertz accelerator surpasses all its competition with the exception of the IIfx machine. It gives high performance without the expense of special IIfx RAM. An INIT is provided to ensure proper floppy operation. For Mac II, IIx. Without FPU, \$1,799; with FPU, \$1,999. Siclone Sales and Engineering, 107 Bonaventura Dr., San Jose, CA 95134. (800) 767-8207 or (408) 263-8207. (Aug

Sicione Turbo SE tttt

Delivering solid 60-percent improvement over SE performance, this 68000-based, 16-megahertz accelerator is a great buy for SE owners. Mac RAM and ROM must be moved to accelerator. Without FPU, \$398; with FPU, \$796. Siclone Sales and Engineering, 107 Bonaventura Dr., San Jose, CA 95134. (800) 767-8207 or 408) 263-8207. (Aug '90) Total Systems Gemini 020

This cost-effective 16-megahertz 68020 board can increase Plus performance by 300 percent, but installation is complex. Recommended GemKit option speeds SCSI throughput on the Plus. Can be upgraded to 68030. For 128K, 512K, Plus, SE. SE: \$745, with FPU, \$935; Plus: \$895, with FPU, \$1,045. Total Systems Integration, 99 W. 10th Ave., Suite 333, Eugene, OR 97401. (800) 874-2288 or (503) 345-7395. (Aug '90)

Total Systems Gemini 030

This 25-megahertz 68030 accelerator board provides performance increases of up to 500 percent, boosting Plus performance past that of a IIci. It has a built-in PMMU. Installation is complex. GemKit option speeds SCSI throughput on Plus. For 128K, 512K, Plus, SE. SE: \$1,695; with FPU, \$2,195. Plus: \$1,895; with FPU, \$2,395. Total Systems Integration, 99 W. 10th Ave., Suite 333, Eugene, OR 97401. (800) 874-2288 or (503) 345-7395. (Aug

Total Systems Voyager 030/33

This 68030-based 33.3-megahertz accelerator, manufactured by Siclone, is identical to the Siclone Si3033. A 50-megahertz version with 50-megahertz FPU is also available. For Mac II, IIx. Without FPU, \$1795; with FPU, \$1995. Total Systems 99 W. Tenth Ave., Eugene, OR 97401. (800) 874-2288 or (503) 345-7395. (Aug

#### PORTABLES

Apple Macintosh Portable tttt1/2

State-of-the-art screen technology and a removable, rechargeable long-lasting battery make this 100percent-Mac machine a must-have for traveling Mac users. The 15.9-pound, 68000-based Macintosh Portable includes a trackball and a standard keyboard. Maximum battery life is 16 hours. Floppy only, \$4,799; floppy and 40megabyte hard-disk drive, \$5,499. Apple Computer, Inc., 20525 Apple Computer, inc., 20323
Mariani Ave., Cupertino, CA
95014. (800) 776-2333 or (408)
996-1010. (Sept '90) ★'89 Eddy
Colby SE/30 ‡‡‡½

Providing SE/30 power in a transportable package, this 68030based, 16.6-pound machine fits under an airline seat. The Colby SE/30 features a supertwist 512x-342-pixel LCD with contrast and brightness controls, a 68882 math coprocessor, a hard-disk drive, as well as modem options. Maximum battery life is three hours. \$5300 with hard disk. Colby Systems, 2991 Alexis Dr., Palo Alto, CA 94304. (415) 941-9090. (Sept '90)

Dynamac SE/30 ttt

A heavyweight in terms of power, price, performance, weight, and lots of extras, this 68030-based, 19.1-pound. portable includes a 40-megabyte hard-disk drive, a fax modem, a video card, and a 64K hand-held Sharp Wizard electronic datebook with a Mac interface kit. Its 640-x-400 electroluminescent display offers sharper contrast and clearer legibility than other portable screens but falls short of matching activematrix-display sophistication. No battery option. \$9,995. Dynamac Computer Products, 555 17th St., Suite 1850, Denver, CO 80202. (303) 296-0606. (Sept '90)

Outbound Laptop System \$\$\$ At 9.4-pounds, this sharp-looking portable is a light alternative to the Macintosh Portable. Unfortunately, Mac Plus or SE ROMs have to be installed in the motherboard. The Outbound Laptop System has a supertwist LCD and three hours' battery life but lacks SCSI connection and ADB. Requires Mac Plus or SE. Floppy-disk only, \$2,999; 40-megabyte hard-disk-drive version, \$3,999. Outbound Systems, 4840 Pearl E. Circle, Boulder, CO 80301.(303)786-9200.(Sept '90)

Psion Mobile Computer 400

A forerunner in the notebookcomputer category, the 5-pound. Mobile Computer 400 features a standard keyboard, a 640-x-400pixel display, and an estimated 60 hours' battery life. A proprietary operating system limits the variety of software this computer can use, but a text editor, basic terminal program, and database manager are supplied and more programs are in the works. \$1,795. Psion, 118 Echo Lake Rd., Watertown, CT 06795. (203) 274-7521. (July '90)

#### TELECOMMUNICATIONS **Anchor Automation**

24E5 MacPac ttt This 2,400-bps modem has aver-

age performance. Includes basic but limited software and a good warranty. Requires Mac Plus or later. \$339. Anchor Automation, Inc., 20675 Bahama St., Chatsworth, CA91311. (818) 998-6100. (Jan '91)

Applied Engineering DataLink Express \$\$\\\^2\$

Slow, limited software hampers this 2,400-bps modem's performance. Includes cable and a good warranty. \$249; with fax, \$349. Applied Engineering, 3210 Beltline Rd., Dallas, TX 75234. (214) 241-6060. (Jan '91)

Computer Friends Lightspeed 2400LE \$\$\$1/2

The price/performance ratio of this 2,400-bps modem gives it an above-average rating. Throughput for the Lightspeed is not exactly speedy despite the nomenclature. Make sure the right cable (the CBL-124) is included. \$159. Computer Friends, Inc., 14250 N.W. Science Park Dr., Portland, OR 97229. (503) 626-2291. (Jan

Global Village TelePort/A300

Small and light, this 2,400-bps modem is excellent for taking on the road. The TelePort doesn't require an external power source or a serial port. Solid performance at a reasonable price. Requires Mac SE or later. \$225 (\$149.95 direct from manufacturer). Global Village Communication, 1204 O'Brien Dr., Menlo Park, CA 94025. (415) 329-0700. (Jan '91) \*'90 Eddy

Hayes Microcomputer **Products V-series** Smartmodem 2400 ####

The Hayes Smartmodem set the standard for superior performance, and it continues to be a market leader. Its software is intuitive. Souped-up compression schemes boost throughput as high as 9,600 bps. \$899. Hayes Microcomputer bps. 3899. Hayes intercomputer Products, Inc., P.O. Box 105203, Atlanta, GA 30348. (404) 441-1617. (Jan '91) Intel 2400EX MNP-Macintosh

Intel's 2,400-bps modem has average performance. Includes basic but limited software and a good warranty. Make sure the package wariany. Make Safe the Package includes the right cable, \$369. Intel Corp., 5200 N.E. Elam Young Pkwy., Hillsboro, OR 97124. (800) 538-3373 or (503) 538-3373. (Jan '91)

Mirror Technologies DM2405

Mirror Technologies' 2,400-bps modem has average performance but is an excellent value because it is bundled with MicroPhone II 1.5. Upgrading to MicroPhone II 3.0 is only \$75. Includes cable. \$197. Mirror Technologies, 2644 Patton Rd., Roseville, MN 55113. (800) 654-5294 or (612) 633-4450. (Jan '91)

Prometheus ProModem 2400M Plus \$\$\$\$

The easy-to-use Prometheus ProModem 2400M Plus is an average performer. It comes bundled with cable and excellent software. \$349. Prometheus Products, Inc., 7225 S.W. Bonita Rd., Tigard, OR 97223. (503) 624-0571. (Jan

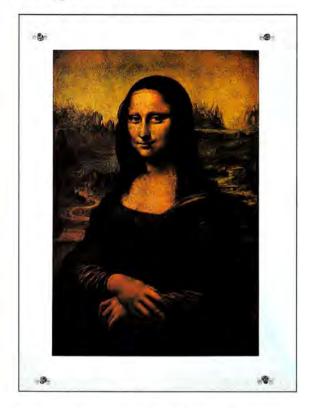
Relisys Tefax RA2110M ttt The Tefax is a Group 3-compatible stand-alone fax machine with a serial interface that enables it theoretically to act like a fax modem, thermal printer, or 200-dpi scanner. Great idea, but implementation needs a little work. Print quality is low, which means it doesn't really replace a printer or a scanner. The fax machine works fine but lacks a paper cutter. Requires Mac with I megabyte of RAM. \$1,295. Relisys, 320 S. Milpitas Blvd., Milpitas, CA 95035. (800) 735-4797 or (408)

945-9000. (June '90) Zoom Telephonics Zoom/Modem V.42bis \$\$\$\$\\\^2 The Zoom/Modem V.42bis is a

speed champion, offering a truly excellent price/performance ratio and throughput speeds of 9,600 bps. \$249; cable, \$12. Zoom Telephonics, Inc., 207 South St., Boston, MA 02111. (800) 631-3116 or (617) 423-1072. (Jan '91)

# Get the real thing for the price of a reproduction.





# True PostScript® printing for only \$2,144\*: microLaser™ PS17 from Texas Instruments.

Now you can afford the powerful font and graphics capabilities of the industrystandard PostScript software from Adobe\*.

The perfect partner for your Macintosh®, the microLaser PS17 features true Adobe PostScript printing. So you don't have to settle for an imitation that costs about the same, but gives you less. Plus, microLaser offers these other advantages:

17 Scalable fonts. Plenty to get you started. If you need more, choose the microLaser PS35 model, with 35 PostScript fonts. Both PS17 and PS35 models feature the new Adobe ATM™ font rendering technology, which improves the quality of PostScript fonts and prints them significantly faster.

The industry standard. With microLaser and PostScript, you can access more than 600 high-quality typefaces and over 4,000 software applications. PostScript also gives you more graphics power so you can print precise lines and smooth curves. Integrating text and graphics is easy, and



POSTSCRIPT

the microLaser can print even your most sophisticated page layouts and illustrations. It's also compatible with the HP LaserJet\* Series II and allows you to switch between the HP and PostScript modes easily.

Superior paper handling.
microLaser's paper drawer holds 250 sheets
– and it conveniently slides inside the
printer to save space. An optional, second
250-sheet paper drawer and envelope

The smallest footprint you'll find. At only 13.4" wide and 14.2" deep, microLaser offers what BYTE magazine calls, "an exquisitely small footprint and a compact design, destined for a cramped desktop."\*\*

As your needs grow, so do microLaser's capabilities — without tools or technicians. Just add upgrade boards for more memory and optional interfaces. Or plug in microCartridges for additional fonts and emulations.

With all of this capability, why settle for less than the microLaser with PostScript?

Call us for additional information and the name of a dealer near you.

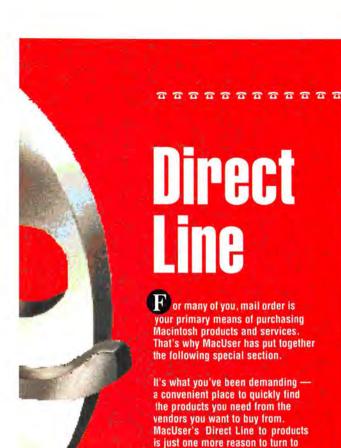
1-800-527-3500.



© 1991 TI 71821

\*TI suggested list price. Includes AppleTalk\* interface. \*\*BYTE magazine, July 1990 issue, microLaser is a trademark of Texas Instruments. ATM is a trademark and Adobe and PostScript are registered trademarks of Adobe Systems, Inc. LaserJet is a registered trademark of Hewlett-Packard, Inc. Macintosh and AppleTalk are registered trademarks of Apple Computer, Inc.

feeder are available for extra versatility.



## Preferred Computing

To Place your Order, Call Toll-Free

# 1-800-327-7234

Applied Engineering
DataLink/Mac (MacII)\$181
w/MNP-5 or SendFax \$219
w/MNP and Send Fax\$259
DL/Mac Portable
(w/MNP-5 & SendFax)\$181
QuadraLink (MacII)\$189
3.5" 800k drive\$189
3.5" 1.44 meg SuperDrive \$229
Mac II/x/fx ext. drive cable \$19
MacRam Classic Øk\$55
w/1 meg\$99
w/3 meg\$222
MacRam Portable 1 meg\$355
w/2 meg\$674
w/3 meg\$993
"Cache-in" 32k high speed cache
card for Mac IIci\$195



#### DataLink LC TM

by Applied Engineering
The first data/fax modem for the New
Macintosh LC computer. DataLink LC
includes an additional mini-din serial
port, Send-Fax & 68882 FPU socket.
V.42 bis option also available.
DL-LC w/Send-Fax ......\$229

DL-LC w/Send-Fax ......\$229 DL-LC w/v.42 bis & Send-Fax .....\$249 68882-16mhz FPU .....\$119

Macintosh

and everything For-A-Mac

Technical Support, or Customer Service, please call:

#### 1-214/484-5464

FAX your Order to:214/247-8151
Send mail orders to: P.O. Box 815828, Dallas, Texas 75381
We accept MasterCard, Visa and COD orders. Tx residents add 7.25% tax. School and Government Purchase orders accepted.

#### **FOR-A-MAC**

#### **MAC IIsi System**

Mac IIsi, 5 megabytes of RAM, 105mb Quantum Hard Drive, 1.44mb Apple SuperDrive, Mouse, Apple Standard Keyboard, NEC MacSync 14" High Resolution Color Monitor.

Only...\$3665

#### **MAC IIci System**

Mac Ilci, 5 megabytes of RAM, 105mb Quantum Hard Drive, 1.44mb Apple SuperDrive, Mouse, MacPro Extended Keyboard, NEC MacSync 14" High Resolution Color Monitor.

Only...\$5119

#### **MAC IIfx System**

Mac Ilfx, 4 megabytes of RAM, 105mb Quantum Hard Drive, 1.44mb Apple SuperDrive, Mouse, MacPro Extended Keyboard, RasterOps ColorBoard 264, NEC MacSync 14" High Resolution Color Monitor.

Only...\$7589

#### **FOR-YOUR-MAC**

MacUser for relevant information

aimed at the serious user.

CPUs
Mac IIIc 2/40\$1849
Mac Classic 2/40\$1279
Classic 16mhz Accelerator \$199
Classic 1.5mb Upgrade\$109
Classic 3mb Upgrade\$199
128K CI Cache Card\$259

## 

Video Cards	
RasterOps 24s	\$530
RasterOps 24si	\$739
RasterOps 264/SE30	\$599
RasterOps Accelerator	\$335

Printers	
OMS PS410	\$2039
TI MicroLaser/P	
NEC Silent Write	

#### **FOR-YOUR-MAC**

#### Miscellaneous Peripherals MicroTek 300zs Scanner ..... \$1704 (with Adobe Photoshop)

( territ i teroce i motosmop)
Zoom v.42bis Modem\$195
Zoom 2400 Modem\$89
Abaton InterFax 24/96\$339
NEC CDR-36 w/ interface\$469
Farallon Mac Recorder\$159
Mac 101 Keyboard\$139
DataDesk Switchboard\$158
AE QuadraLink\$199
SI NuBus Exansion Chassis \$1099
MicroNet 45mb Removable \$699
Syquest Cartridges\$81
PhoneNet 10 pack\$165
PhoneNet Connector\$25
1mb SIMMs\$49 each
(free installation manual and tool)
SIMM installation video\$29

#### SIMM installation video .......\$29 Seikosha AP-1000 Printer ....\$219 Ikegami 20" 24bit Bundle ....\$3499

#### Wacom Graphics Tablet 6 x 9 (tablets include stylus) ... \$508

U X 7 (tablets illefude stylus).	
12 x12	\$719
15 x 15	
12 x 17	1095

# MacSource TN Do It For Your Mac

and For Yourself! 4009 Michigal Purkway • Source 10: Austra, Texas 78756 1512: 467-9652 • 1800/367-262.

FAX (512) 219-1916 International Color Williams P.

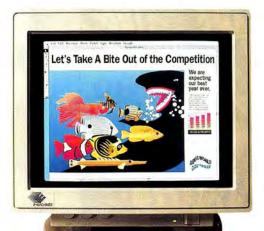
1.800.367.2622

1.800.FOR.A.MAC

**Call For The Best Price on Your Own Custom Mac System** 

Terms: Yos & Maser Cartl accepted with on surcharge. Pursue detact. No. for prepayment by cashier's check. Resourking fee on product burphased in arror.

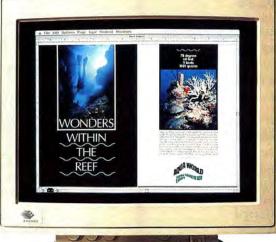
# The E's Have It







Full Page 16' Display System. \$1,495\*





Two Page 16" Display System. \$2, 195\*



Two Page 19" \$3,095\*



# DEALTIME

Trade-in Rebate

\*\$500 off when you send us your Apple 13" Color Display.

Macintosh Systems

MAC Ilsi, T16 Color Display 2MB/40HD, Keyboard \$4995 MAC Ilsi, T16 Color Display 5MB/80HD, Keyboard \$5595

Trade

Me!

MAC Ilci, T16 Color Display

MAC Ilfx, T16 Color Display 4MB/105HD, Keyboard \$6595 4MB/105HD, Keyboard \$8690

E-Machines Extras

Quickview Studio . . . . . . . \$1,995 Call for E-MACHINES 24-bit Display Prices! "ERI DIRECT has become a terrific source for Macintosh products. I give them a 5-mice rating!" Joe Salinger, Scholastic, Inc.

"The winner and still champion. We simply couldn't find a flaw in this razor sharp 16-inch Trinitron."

MacUser LABS, May 1990



NATIONWIDE RESELLER

1801 West Larchmont Ave. Chicago, Illinois 60613 USA 312.549.0030



Call Today! 800-535-3252

Try It For 21 Days At NO Risk!

# HARD DRIVES

There's nothing remarkable about finding great quality, prices and service.

Unless you're buying your hard drive somewhere else.

- · 48 hr. burn in
- · Name brands
- · Multiple case options
- · Formatted drives
- · Free test software
- · Full line of storage options
- · Fast drives 11 msec & up
- · Toll-free assistance
- · Factory support
- Instant replacement policy
- Knowledgeable salespeople
- Huge inventory
- Application engineering
- Same day shipping



Maxtor External Half Height

\$369 40MB 17msec \$489 80MB 17msec \$849 200MB 15msec

340MB 13msec \$1,489

Maxtor External Full Height

150MB 14msec \$919 \$1,369 360MB 14.5msec \$1,579 616MB 16.5msec

\$1,669 675MB 16.5msec



Removable Media Hard Drive

\$489 44MB 25msec

cartridges \$72

External

Tape Backup With Software & Tape

60MB

\$519

120MB

\$599



**Maxtor Tahiti** External Read/Write Optical

\$3,899 1 GByte

cartridges \$249

May Special Maxtor Internal Classic Kits

\$319 40MB 17msec

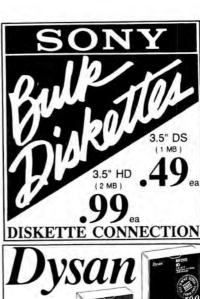
80MB 17msec

\$419



4657 MacArthur Lane Boulder, CO 80303

Please circle 17 on reader service card.





DISKETTE CONNECTION

FLEXIBLE DISKS

( MINIMUM ORDER 10 BOXES )

5.25" DOUBLE SIDE 2.90 h

5.25" HIGH DENSITY 5.30

( MINIMUM ORDER 5 BOXES )

3.5" DOUBLE SIDE 4.95 AS

HIGH DENSITY 9.95 A

DISKETTE CONNECTION

NORTHEAST & CANADA

1 (800) 451-1849

SOUTHEAST

1 (800) 940-4600

MIDWEST 1 (800) 654-4058

WEST - HAWAII & ALASKA

1 (800) 621-6221

PO BOX 12396, LAS VEGAS, NV. 8911 dinimum Order \$20.00 NO SURCHARGE on VISA / MC COD orders add \$3.50 Shipping charges determined by items and delivery method required by customer. ( Prices are subject to change without notice)

FAX (405) 495-4598

Please circle 120 on reader service card.

# Just like a surprise in a Cracker Jack box.



### You get more than you expect from Third Wave.

It's fun to open a box from Third Wave. Whether it's an Optical disk drive or a SCSI cable, you always get something extra, from 12 megabytes of shareware on your pre-formatted hard disk, to a toll-free support line.

Every Third Wave hard disk is loaded with lots of useful software, including full-featured partitioning and protection utilities. All removable or tape drives come with a free tape or cartridge. Best of all, every product that Third Wave sells is backed with excellent customer support provided by experienced Mac professionals. If you only shop for the lowest price, you can miss the extras that make a product superior. MacWorld Magazine has this to say about Third Wave hard drives. "... Especially quiet,...the quietest of the 64 drives tested...fast-3 of the fastest 12 tested were Third Wave's,...a good bargain." Quality doesn't just happen. Reliable components and quality control make our products faster, quieter-better.

Speed of delivery is also paramount for most buyers. Our merchandise is shipped via Federal Express because we feel it is the fastest and most reliable way to insure prompt delivery. Call the Third Wave professionals today and surprise yourself!

#### The Third Wave Shopping Mart Storage Devices Media SIMMs Video, Printers. Add-ons Quantum Internal Standard Premium Teac CT600H (60mb) \$17 Mac SIMMs (1, 2, 4mb) IIfx SIMMs (1, 4mb) 40 18ms (12ms with Cache) \$319 \$419 \$449 Teac CT600N (150mb) 24 DayStar Fastcache \$299 469 NTX SIMMs (1mb) 52L <17ms (<12ms with Cache) 369 499 Syquest SQ400 74 DayStar Powercards Call 419 519 549 4mm DAT Tape 19 Portable (1 to 8mb) 105 18ms (<12ms with Cache) Radius Accelerators Call 105L <17ms (<12ms with Cache) 519 649 Optical Cartridge (ISO/Sony)159 Classic SIMMPack 68851 PMMU w/Virtual 179 120 <15ms (<10ms with Cache) 679 779 809 (1, 2.5, 3mb)TI MicroLaser PS35 Call 749 849 879 Call for price quotes. 170 <15ms (<10ms with Cache) **UltraCombos** Seiko ColorPoint PS Call 869 969 999 210 <15ms (<10ms with Cache) Microtek 300ZS Color 1799 Seagate Internal Standard Premium 300/45R \$1999 Combo Drives Epson ES300C (600 dpi) 1799 173 18ms \$999 \$1099 \$1129 300/1550t 2049 Asanté Ethernet Mac II/SE 30 379 1269 1369 1429 3799 300 16.5ms 600/DAT 105/45R \$1049 2049 Cayman Gatorbox 330 1519 1619 1679 650/Optical 5699 11ms 170/150t 1419 RasterOps 1599 1699 1729 330 14ms 3.5 1000/DAT 4999 170/DAT 2399 264-264 SE 30 399/649 1699 1799 425 16ms 1829 1000/Optical 6799 210/DAT 2499 364/364 Director bundle 949/1299 425 1799 1899 1929 2000/DAT 14ms 3.5 425/45R 2399 364 Audio Media bundle 1499 600 16.5ms 1729 1829 1889 Over 30 combinations. 425/DAT 3399 8L-24L Systems Call 650 2199 2299 2369 15.5ms 769 2999 3099 3169 1000 15ms ClearVue II, GS, GS30 Call Syquest, Tape, DAT, Optical Standard Premium Radius Pivot, TPD19, TPD 21 Call 45R (Syquest, one cart) \$569 \$599 SuperMac Video Systems Call 45DR (Dual Syquest, two carts) 1099 Seiko Trinitron 14" 589 569 60t (Teac) w/Retrospect and one tape Sony 1304 14" 699 150t (Teac) w/Retrospect and one tape 679 Ikegami Trinitron 19" 2195 DATadrive™ 1.3GB WangDAT, Ikegami 8- & 24-bit Systems Call 1799 w/Retrospect, one tape OptiDisk™ 600 (Sony) w/one cartridge 3499 OptiDisk™ 1000 (Maxtor) w/one cartridge 4399

Wave Computing

1826B Kramer Lane, Austin, Texas 78758 (512) 832-8282 • (512) 832-1533 (FAX)

Most deliveries via Federal Express.

Graphic Design & Three A. D. Inc., 1991. Photography @Jack Puryear Photography, 1990/91. This ad was produced using a Macintosh II.x, Macintosh II.x, Macintosh II.x, with Third Wave removable drives, Quantum 105 internal drives, a Nikon LS slide scanner and a Microsck 300ZS color scanner. It was output on a Compugraphic 9600. Software used includes Adobe Illustrator, Adobe Photoshop, PageMaker, and Microsoft Word. (Macintosh, Illustrator, Photoshop, PageMaker, Quantum and Word are trademarks of their respective companies.) Please circle 101 on reader service card.

## THIS MONTH'S SPECIALS

Microtek 300ZS	Radius 19" Two Page Display \$1,299
QMS-PS*410\$2,049	SIMMS\$45
Quantum 105 Internal	SyQuest Cartridges\$63
Qume ScripTEN\$1,649	SyQuest Removable Drive\$399
	TI Microlaser PS 17\$1,399
RasterOps ColorBoard 364* \$879	TI Microlaser PS 35

ACCELERA	TORS
DayStar Digital Fast Cache Ilci PowerCache Ilci 40 MHz PowerCache Ilci 50 MHz Radius Accelerator 16 for +, SE Accelerator 25 for SE.	\$899 \$1,599 \$549
FAX MODI	EMS
Abaton Interfax Modem 24/96	\$299
HARD DISK	DRIVES
Imprimis MacWren 300 MacWren 330 Runner MacWren 600 MacWren 1.2 Gig	\$1,479/\$1,579
Quantum TWO YEAR WARRANTY Quantum 40 Quantum 105 Quantum 170 Quantum 210	\$289/\$389 \$399/\$459 \$659/\$739
MONITO	RS
Magnavox TWO YEAR WARRANTY	\$429

#### MEMORY

Seiko

14" Color Monitor. . . . . .

SIMM SALE \$45 FREE Installation Manual Included!

#### MONITOR SYSTEMS

Magnavox	
14" Color Monitor with 8 bit Video	
Interface Mac II family†	\$699
14" Color Monitor with 24 bit Video	7777
Interface Mac II family*†	.\$799
14" Color Monitor with 8 bit Video	
Interface Mac SE/30	\$799
Nubus adapter	\$95

Radius	
Full Page Display for +, SE	9
Pivot Display W/Video Card	
Two Page Display 19"\$1,29	
Two Page Display 21"\$1,49	9
RasterOps	
ColorBoard 264*\$38	9
ColorBoard 364*\$87	
ColorBoard 8S	
ColorBoard 24S	
ColorBoard 24L	
Samsung	
15" Full Page Monitor with Video Interface \$44	9
Mac Plus, SE, SE/30 and Mac II Family	
15" Full Page Monitor with Video Interface	9
for Ilsi with nubus adapter.	

#### **PRINTERS**

Kodak	
Diconix Color 4 Printer	\$1,169
NEC	
SilentWriter 2 Model 90	\$1,799
QMS	
QMS-PS" 410 PostScript"	\$2,049
Qume	
CrystalPrint Publisher I	. \$1.699
CrystalPrint Publisher II	.\$2,125
ScripTEN PostScript	\$1,649
Seiko	
Smart Label Printer	\$199
Texas Instruments	
PS 17 Microlaser with interface	.\$1,399
PS 35 Microlaser with interface	\$1,699

#### REMOVABLE DISK DRIVES

SyQuest 42 Removable

cartridge not included

Cartridges \$63

#### **SCANNERS**

Microte	k																				
300GS			ė										į.	ż					\$1,	24	9
300ZS				,														,	\$1,	67	9

while supplies last †Ilsi requires nubus adaptor







24 Hour Fax Line 602-897-1921

4747 East Elliot Road, #29-461 • Phoenix, AZ 85044

# Apple Prices that Aren't Hard to Swallow.

TI MicroLaser PS/35 with Apple Talk Interface ... Only \$1599!\*

## Affordable Macintosh Systems

#### PRICE BUSTERS

NEC CDR-35 Portable	
ROM Reader	\$449
Macintosh Classic 2/40	\$1289
Wacom 12 x 17 Tablet	\$1099
Wacom 15 x 15 Tablet	\$1099
Wacom 12 x 12 Tablet	\$725
Wacom 6 x 9 Tablet	\$510
Wacom Mac Interface Kit	\$40
MicroTek 300ZS Scanner	\$1709
Express 15" Portrait Display	\$579
Kensington Turbo Mouse	\$109

Limited Quantity Available Order Today for Faster Delivery

Full Waranties on All Products!

8711 Burnet Road, Building E-56 Austin, Texas 78758 • (512) 454-4739 FAX: (512) 454-0980 • (800) 622-7123

#### Special on MAC IIsi

Macintosh IIsi CPU, 5mb RAM, 105mb hard drive, 1.44mb FDHD, Apple Standard Keyboard, NEC 14" MacSync.

You Pay

#### Mac Ilfx System

Macintosh IIfx CPU, 105mb hard drive, 4mb RAM, MacPro Extended Keyboard, 8 bit color, NEC 14" MacSync.

\$7,599 You Pay

#### **Mac Ilci System**

Macintosh IIci CPU, 105mb hard drive, 5mb RAM, MacPro Extended Keyboard, 8 bit color, NEC 14" MacSync HC.

\$5,199 You Pay

#### Solutions that make Sense...

#### Display Solutions

Express 24 bit 20" Trinitron	\$3539
Express 8bit 20" Trinitron	\$2699
RasterOps 24s NEW!	\$545
RasterOps 24si	\$809
RasterOps 24L 19" System	\$5459
RasterOps Accelerator	\$330
Ikegami 20" Trinitron	\$1859
Apple RGB 13" High Res	\$690
Seiko 14" CM-1445 Color	\$569
MacSync 14" Color Monitor	\$425

#### Radius Display

Prices Include Card	
Two Page 19" Mono Display	\$1359
Two Page 20" 8bit Color	\$4079
Two Page 20" 24bit Display	\$5185
Pivot/SI/GS	\$995
Pivot Monochrome	\$1099
Pivot Grayscale	\$1199

#### Sale on Mac Printers

QMS 410 Laser	\$2040
TI MicroLaser/PS35	\$1589
TI MicroLaser/PS17	\$1349
NEC SW2 Model 90	\$1599
NEC SW Model 290	\$2499
QMS ColorScript 100	\$7489
ExpressLaser300 dpi printer	\$1050
Express Phone Net Connecte	or \$20
ImageWriter Cable	\$15

If you just don't know what your computer solution is, call us. We just want to make sure you get what you really need; we're not here to just to make money - were also here to make friends.

Terms: We accept Visa, MasterCard, and Discover. Orders prepaid by check may deduct 1% from above prices. Returns may be subject to restocking fee. All prices subject to availability. Shipping not included.

## 1-800-622-7123 • 1-800-MACS-123

Please circle 41 on reader service card.

#### THE JOHNS HOPKINS NATIONAL SEARCH TOR CUMPUTING TO ASSIST PERSONS WITH DISABILITIES

A National Search for computer based applications to help persons with physical or learning disabilities is being conducted by The Johns Hopkins University with grants from the National Science Foundation and MCI Communications Corporation.

A grand prize of \$10,000 and more than 100 other prizes will be awarded for the best ideas, systems, devices and computer programs developed by Professionals, Amateurs, and Students.

Entry deadline is August 23, 1991.

For more information write to:

Computing to Assist Persons with Disabilities P.O. Box 1200 Laurel, MD 20723

## The next best thing to a portable Macintosh.

Author Danny Goodman (The complete HYPERCARD Handbook) calls the Liberty Portable Hard Disk "everything I hoped it would

> be: compact, lightweight, quiet, fast, and durable enough to ride with me in my briefcase to demonstrations and talks."



With Liberty, you're ready to work anywhere there's a Mac. Use it to send large documents and graphics between locations. Create a multimedia show and take it on the road. Daisy-chain several drives together for expandable, instantly-accessible mass storage. There's no end to the uses you'll find for this small wonder.

The Liberty is the only portable with all the features you'd expect in a full-size drive: super-reliable, high performance Quantum and Conner drive mechanisms: a built-in-power supply; and memory from 40 to 425 MB. Yet it measures only 2"x5"x7", weighs under 3 pounds, and costs less than comparable full-size drives. Once you spend a month with a Liberty portable hard disk, you'll wonder how you got along

without it.

The Affordable Portable 120 Saratoga Ave., Ste. 16, Santa Clara, CA 95051

Call us today for A 30-day trial. (408) 983-1127

Please circle 176 on reader service card.

# AD INDEX

## MacUser

950 Tower Lane, 18th F Foster City, CA 94404 Phone (415) 378-5600 Fax (415) 378-6903

#### National

Jonathan A. Lane, Associate Publisher (415) 378-5639 Lee J. Unlacke, Advertising Sales Manager (415) 378-5692 Klm Riskas, Advertising Coordinator (415) 378-5606 Kathnyn Cumberlander, Classified Advertising Director (212) 503-5115

Northeast (MA, ME, NH, RI, VT, CT, east Canada) Gina Clampa, District Manager Mystic Center, 10 President's Landing Medford, MA 02155; (617) 393-3055 Maney Romano, Account Representative (415) 378-5657

Mid-Atlantic/Southeast (NY, NJ, PA, DE, MD, DC, VA, WV, NC, SC, GA, FL)

Angelo M. Turco, Jr., District Manager, One Park Ave., New York, NY 10016; (212) 503-5416 Molly Shank, Account Representative (415) 378-5677

Central (WI, IN, MO, OH, MI, IA, ND, SD, AL, MS, TN, MN, OK, KS, IL, KY, LA, NE, AR, TX, central Canada)

OK, KS, IL, KY, LA, NE, AR, TX, central Stephen Shore, District Manager, 5956 Sherry Lane, Sulte 625, Dallas TX 75225; (214) 691-6934 Joann Casey, Account Representative (415) 378-5622

#### West

Northwest CA (San Francisco and north), NV, AK, OR, HI, MT, WA, ID, Canada (British Columbia, Alberta, and Saskatchewan)

Leslie Hutchison, District Manager 950 Tower Lane, 18th Floor, Foster City, CA 94404; (415) 378-5605 Amanda Waterfield, Senior Account Representative (415) 378-5651

Bay Area (Carmel to San Francisco)

Justici Manager 950 Tower Lane, 18th Floor, Foster City, CA 94404; (415) 378-5699 Laurie Eddy, Account Representative (415) 378-5659 Sam Levin, Account Representative (415) 378-5659

Southwest CA (San Luis Obispo county and south), AZ, NM, UT, WY, CO

Calherine Davenport, District Manager 3530 Wilshire Blvd., Los Angeles, CA 90010; (213) 351-1842 Deborah Tyo, Account Representative (415) 378-5635

#### Ziff-Davis MacNETWORK

#### Advertising Sales:

MacUser and MacWEEK in combination. J. Samuel Husy, Group V.P./Director (415) 378-5601
Peter Weedfald, Advertising Director (212) 503-3755
André Lengyel, Sales Coordinator (415)378-5681
Leta C. Fisher, Asst. to Group V.P./Director
(415)378-5661

RS#	ADVERTISER	PAGE
61	Abaton	47
129	ADDOU Systems, Inc	76
88	ACIUS	311
100	AEC Management Systems	97
183 N/A	Aldus	RG23
N/A	Aldus	.220-221
N/A	Alliance Peripheral Systems	.326-327
71 394	ALSON INC	1.30
N/A	Apple	102-103
70	Altsys Apple Applied Engineering Articulate Systems	67
89	Articulate Systems	40
37 N/A	Bottom Line Distribution	325
42	Asanté Technologies	BG62
43 365	Calcomp	BG62
420	Caravelle Networks	255
75 76	Casady & Greene, Inc	266
76	Casady & Greene, Inc	257
146 151	Central Point Software	. 207-209
N/A	CheckFree Checkmark Software	117
366 400	Checkmark Software Chinon America, Inc	72 PC12
N/A		
119 132	CompuServe	55
	Computer Associates/Bedford	29
64 N/A	CoStar	261
376	Curtis Manufacturing	12
40	Custom Applications, Inc	16
122	Davna	210
133 122 159 160	Claris CompuServe Computer Associates/Bedford Computer Friends, Inc. CoStar Curtis Manufacturing Custom Applications, Inc. Dantz Development Dayna Daystar Digital Daystar Digital Daystar Digital	10
160	Daystar Digital	10
185	Deneha Software	19
125 185 120	Delphi. Deneba Software Diskette Connection Dr. Mac Dubl-Click E-Machines	290
161	Dr. Mac	. 306-307
395 150	F-Machines	RG34-37
168	Easiman Kouak	BUZƏ
180 154	Ehman	22-23
44	EMAC Engineered Software Epson ERI Direct	218
N/A	Epson	.208-209
370 78	ERI Direct	289
102	Farallon Fifth Generation Systems, Inc Fifth Generation Systems, Inc	240
104	Fifth Generation Systems, Inc	101
103	Fifth Congretion Systems, Inc	964
114	GCC Technologies	75
93	GCC Technologies	BG31
112	GCC Technologies	73
13	Generic Software	127
13 15	Golden Triangle	329
82 N/A	GraphSoft Hard Drives International	30
41	Hardware Express	293
N/A	Hardware Express Hewlett-Packard	68-69
N/A N/A	Hewlett-Packard Image Club Graphics, Inc	70-71
	Insignia Solutions. Inc.	276
155	Insignia Solutions, Inc Intelligent Resources International Business Softwa	246
363 98	Jasmine Technologies	RG2-3
.197	Jasmine Technologies Kelly Temporary Services Kensington	205
387 386	Kensington	200
415	KensingtonLa Cie Limited	134-135
414	La Cie Limited	BG59
170	LaserMaster Corporation	131
176 N/A	Liberty Systems Lifetree Software	293
360	Mac & MORE Inc.	324
80	MacAcademy	238

RS#	ADVERTISER	PAG
N/A	MacAvenue2	49-25
77	MacCenter	30
N/A	MacConnection	.78-8
110	MacFriends	24
108	MacFriends	21
109	MacFriends	24
51	MacLand3	00-30
139	MacProducts USA	30
46	MacSavings	29
45	MacFriends         MacFriends           MacLand         3           MacProducts USA         MacSavings           MacSource         MacSource           Mac S Place         3           MacTown         2	28
N/A	Mac's Place3	12-31
32	MacTel Technology Corp2	98-29
	MacTown	29
153	MacWarehouse2	29-23
N/A	MacZone	.32-3
411	MacZone MENSA Microcom Software Division Micro Technology, Inc. Micro Security Systems MicroNet Technology, Inc. Microsoft Microsoft Microsoft Microtek Lab, Inc.	27
123 130 374 33	Microcom Software Division	26
130	Micron Technology, Inc	BG1
374	Micro Security Systems	32
33	MicroNet Technology, Inc	BG1
N/A	Microsoft	2-C4,
N/A	Microsoft	22
190	Microtek Lab, Inc.	BG3
189	Microtek Lab, Inc.	12
166	Mirror Technologies	9
406	Mirror Technologies	G42-4
67	Mirror Technologies	13
136	Mouse Systems	20
81	NEC Home Electronics	.BG8-
111	NEC Technologies, Inc	24
404	NEC Technologies, Inc	4
144	Newbridge Microsystems	25
148	Udesta Corporation	20
358	Odesta Corporation Ontrack Computer Systems Opcode	32
124	Opcode	21
N/A	Outhoused Contains Inc.	
134	Outbound Systems, Inc	4
36	Paragon Concepts	0
53 59	Paragon Concepts	8
29	Passport	20
138	Peachtree Software	Z
63	Periprieral vision	DCC
172 N/A	Paragon Concepts Paragon Concepts Passport Peachtree Software Peripheral Vision PLI Preferred Computing Prometheus Products, Inc.	Duo
174	Promothous Products Inc.	40
83	QMS, Inc.	( <u>1</u>
84		
85	QMS, Inc. QMS, Inc. QUARK B	
440	OLIVER B	C54-5
409	QUARK QUARK Radius Radius RasterOps Reference Software Seiko Instruments Seiko Instruments Sensible Software	21
141	Radiue	BC2
142	Radius	R-
N/A	RasterOns	RG2
38	Reference Software	
N/A	Seiko Instruments R	G14-1
179	Seiko Instruments	BG5
34	Sensible Software	2
N/A	Shiva	arrest.
164	Sinma Designs	1
167	Silicon Beach	27
N/A	Sitka	1
162	Software That Fits 3	20-32
372 157	Spectrum Holobyte	25
157	SymantecSymmetry Corporation	3
131	Symmetry Corporation	7
87	T/Maker	4
47	T/Maker	G28-2
368	TELEWARE	0
375	Texas Instruments	28
101	Ihird Wave Computing	29
116	Timeworks, Inc.	21
37/	Lotal Systems	24
1/5	Truevision	22
191	U.S. Computer Merchants	29
177	UNIAX Technologies	22
60	WACOM, Inc. Wholesale 54 WordPerfect CorporationB	BG5
N/A	Wholesale 54	30
418	WordPerfect Corporation B	48-4
356	XANTE Corporation	12
	White doilought	1- 0
	BG denotes Buyer	's Guid

ON MACINTOSH PRODUCTS & SERVICES

Fill in your name and address and check off your answers to the six research

Circle the numbers on the card that correspond to the ads or articles you'd like more information about. (Numbers for advertised products

The literature will be mailed to you from the advertiser free of charge.

1, 2, 3	questions. (One card per person, please.)	are repeated in the Advertiser Index as well.)
51 52 53 54 55 56 57 58 59 60 61 101 102 103 104 105 106 107 108 109 110 111 151 152 153 154 155 156 157 158 159 160 161 201 202 203 204 205 206 207 208 209 210 211 251 252 253 254 255 256 257 258 259 260 261 301 302 303 304 305 306 307 308 309 310 311 351 352 353 354 355 356 357 358 359 360 361 401 402 403 404 405 406 407 408 409 410 411	62 63 64 65 66 67 68 69 70 71 72 73 74 7 112 113 114 115 116 117 118 119 120 121 122 123 124 12 162 163 164 165 166 167 168 169 170 171 172 173 174 17 212 213 214 215 216 217 218 219 220 221 222 223 224 22 262 263 264 265 266 267 268 269 270 271 272 273 274 27 312 313 314 315 316 317 318 319 320 321 322 323 324 32 362 363 364 365 366 367 368 369 370 371 372 373 374 37 412 413 414 415 416 417 418 419 420 421 422 423 424 42	Void offer August 31, 1991 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 25 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 75 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 25 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 75 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 25 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 25 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 25 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 75 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500
1. Please indicate which of the follow-	4. For which of the following products are	DISASS DOMES CISADON
ing computers you currently use in your company or organization: (check all that apply)  a Mac Plus  b Mac SE  c) Mac II  c) Mac II	you involved in selecting brands/models to be bought by your company or organization? (Check all that apply) SOFTWARE  O Accounting  P) Spreadsheets/ Financial Planners  Y) PC	NamePhone ()
2. For how many micro computers do you buy products?    f) 1.4   g) 5-49   h) 50+	q) Project Managers   z) Printers/Plotters   r) Word Processors   1) Monitors   s) Database Managers   2) Disk/Tape Back-up   t) Graphics   3) Add-in Boards   u) CAD/CAM   4) Communications	Company
3. Your primary job function is: (check one)  i) Administrative/General Management i) MIS/DP, Communications Systems, Programming	S. Are you involved in the purchasing of microcomputer equipment at your company?  5) Yes 6) No	Address.  City. State Zip.
k) Engineering/R&D     l) Finance/Accounting     m) Marketing/Sales     nì Computer Dealer/VAR	6. If so, what function do you serve in the buying process?  7) Evaluations/Specification 8) Recommendation 9) Buyer/Purchaser	4. ☐ Please send me a one-year subscription to MacUser for \$19.97. Offer valid in U.S. only.
51 52 53 54 55 56 57 58 59 60 61 101 102 103 104 105 106 107 108 109 110 111 151 152 153 154 155 156 157 158 159 160 161 201 202 203 204 205 206 207 208 209 210 211 251 252 253 254 255 256 257 258 259 260 261 301 302 303 304 305 306 307 308 309 310 311 351 352 353 354 355 356 357 358 359 360 361 401 402 403 404 405 406 407 408 409 410 411	62 63 64 65 66 67 68 69 70 71 72 73 74 7 112 113 114 115 116 117 118 119 120 121 122 123 124 12 162 163 164 165 166 167 168 169 170 171 172 173 174 17 212 213 214 215 216 217 218 219 220 221 222 223 224 22 262 263 264 265 266 267 268 269 270 271 272 273 274 27 312 313 314 315 316 317 318 319 320 321 322 323 324 32 362 363 364 365 366 367 368 369 370 371 372 373 374 37 412 413 414 415 416 417 418 419 420 421 422 423 424 42	Void offer August 31, 1991 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 25 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 75 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 25 26 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 75 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 309 25 326 327 328 329 330 331 332 333 334 335 336 337 338 389 390 391 392 393 394 395 396 397 398 399 400 25 426 427 428 429 430 431 432 433 443 45 464 47 488 489 490 491 492 493 494 495 496 497 498 499 500
Please indicate which of the follow- ing computers you currently use in your company or organization: (check all that apply)	4. For which of the following products are you involved in selecting brands/models to be bought by your company or organization? (Check all that apply)	PLEASE PRINT CLEARLY MU5913
□ a) Mac Plus □ d) IBM PC □ b) Mac SE □ e) Other □ c) Mac II	SOFTWARE HARDWARE  o) Accounting   w) Mainframe  p) Spreadsheets/   x) Mini Financial Planners   y) PC	Name
2. For how many micro computers do you buy products?    f) 1-4   g) 5-49	q) Project Managers   z) Printers/Plotters   r) Word Processors   1) Monitors   s) Database Managers   2) Disk/Tape Back-up   t) Graphics   3) Add-in Boards	Phone ()  Company
3. Your primary job function is: (check one)	u) CAD/CAM 4) Communications v) Communications	Title
i) Administrative/General Management i) MIS/DP, Communications Systems,	5. Are you involved in the purchasing of microcomputer equipment at your company?	Address.
Programming	□ 5) Yes □ 6) No	CityStateZip
k) Engineering/R&D     I) Finance/Accounting     m) Marketing/Sales     n) Computer Dealer/VAR	6. If so, what function do you serve in the buying process?  7) Evaluations/Specification  8) Recommendation 9) Buyer/Purchaser	<ol> <li>☐ Please send me a one-year subscription to MacUser for \$19.97. Offer valid in U.S. only.</li> </ol>

# USE THIS CARD TO OBTAIN FREE INFORMATION ABOUT MACINTOSH PRODUCTS AND SERVICES IN THIS ISSUE

(SEE OTHER SIDE)



FIRST CLASS MAIL PERMIT NO 433 RIVERTON NJ

POSTAGE WILL BE PAID BY ADDRESSEE



NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES



Markalallaria din Hardida di dalah da ka

**BUSINESS REPLY MAIL** 

FIRST CLASS MAIL PERMIT NO 433 RIVERTON NJ

POSTAGE WILL BE PAID BY ADDRESSEE

MacUser PO BOX 1688

RIVERTON NJ 08077-9688

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES





60 P Access Road, Suite #101, Stratford, CT 06497

MACROMINI

450

343

60

50

80

267

269 33

33

48

60

50

350

55

55

57

145

239 240

200

29

280

134

49

45

40

58

48 Faces

87

235

79 50

120

54

79

57

399

45

129

152

189

235

212

240

120

279

345

225

305

550

515

150

150

59

159

50

140

34

240

240

232

175

60 72

Art Importer 2.0 Ashlar Vellum

This is a Small Sample of What We Stock - CALL We Carry the Very Latest Versions of Products

4th Dimension 2.0
Access PC 1.0
Accountant Pro. Inc. 1.0
Acta Advantage 1.02
Address Book Plus 2.0
Alarming Events
atOnce! I.I
Big Thesaurus
Bulk Mailer 3.25
C.A.T. III
Calendar Creator
Calendar Maker
Checkfree Mac 1.5
Correct Grammar 2.0
DAtabase v.1.5
Direct Mail 1.0.2
Double Helix III 3.0
Dynodex 2.0
DynoPage 1.0 Portfolio
Endlink 1.1.3
EndNote Plus 1.0
Excel 2.2
File Force I.0
FileMaker Pro
For The Record 2.0
FoxBase + 2.0
Freedom of Press 3.0
Full Impact
Grammatik Mac 2.0
Icon It
In Touch 1.0
Inside Information
Invoice-It Survivor
JetLink Express 2.0
KeyPlan 1.0
Laser Vietnamese
Letter Writer Plus 1.1
MacFlow 3.1.5
MacInTax 1990
MacKanji 6.0
MacLabel Pro.
MacMoney 3.5
MacProject II 2.1
MacroMind Director 2.0
Magic Typist, Art Fonts, or
Sound Clips
Managing Your Money 3.0
Mark Up 1.0.3
MediaTracks
Nisus 3.0
SmartBundle T/Maker
SoftPC 1.3
Spelling Coach Pro. 3.1
SpringBoard Publisher II 2.0
StatView II 1.03
StrataVision 3D
StreamLine 1.2
Super ANOVA I.I
Systat 5.0
The Microsoft Office

The Microsoft Office

Turbo Tax Personal/1040

Think C Think Pascal

Thunder 7

Timeslips III 2.0

WealthBuilder 1.0

WillMaker 4.0

Word Perfect 2.0

Wingz 1.1A

Works 2.00C

Word 4.0

BUSINESS

4th Dimension 2.0

			000
WriteNow 2.2/Grammatik	100	Atlas ManMaker 4.5	300
Zedcor Desk 1.0	198	Atlas MapMaker 4.5 ATM Plus Pack	107
Zedeor Desk 1.0	170	CA-Cricket Graph 1.3.2	118
EDUCATIONAL		Canvas 2.1	175
Alge Blaster Plus	34	Certificate Maker 2.0	21
Carmen Sandiego Series	29	Cheshire 1.0	63
Dinosaur Discovery Kit	27	Claris CAD 2.0	580
Earthquest	27	Click Art Christian Images	37
Easy Color Paint 2.0	44	Cliptures Business 1 or 2	65
Language Master 2.0	55	Cliptures Vol. 3 Sports	65
LSAT Prep by StudyWare	34	Color MacCheese 1.05	56
Math Blaster 1.0	29	ColorStudio 1.0	600
Math Blaster Mystery	29	Comic Strip Factory 1.6	36
Mavis Beacon Teaches Typing Reader Rabbit 2.2	g 31 30	Delta Graph 1.5	104 250
SAT, GMAT, ACT, or GRE	30	Digital Darkroom Dreams 1.1	297
Prep by StudyWare	29	Enhance v 1.03	215
Talking Math Rabbit	29	Fast Track Schedule	135
The Playroom	29	FastForms 2.0	100
Turbo Math Facts	21	FilmMaker 1.0	425
Type! 1.0	17	Fluent Laser Font Library	135
		Font Studio 1.0	355
ENTERTAINMENT		Generic CADD 1.0	370
Ancient Art of War	25	if:X Forms Designer 1.0	157
Balance of Power	29	Images with Impact:	
Balance of the Planet	29	Business Graphics	49
Bomber 1.3 (inc. headphones)		ImageStudio 1.5	139
Chessmaster 2100 1.1 Citadel	29 26	Informed Designer v1.0.4	155 142
Colour Billiards	37	KaleidaGraph 2.1 Letra Studio 1.5	265
Cribbage/Gin King	30	MacDraft 2.1	260
Crystal Quest 2.2	28	MacDraw II 1.1	270
Darwin's Dilemma	29	MacPrint II	79
Faces	21	MapArt PICT or EPS	45
Falcon 2.2	29	Mariah 1.0 Symmetry	90
Ishido	31	Model Shop 1.1	359
Leisure Suit Larry	23	Personal Press	195
Leprechaun	29	Pixel Paint Professional 2.0	385
Life & Death	29	Publish-it!	222
MacGolf Classic MacSki	50	Quark Express	459 165
Man Hunter New York	39 28	Ready! Set! Go! 4.5A Smart Art I, II or III	58
ManHunter San Francisco	28	Smartform Designer	237.
Mission Starlight	28	Studio/32	440
Moriarity's Revenge	29	Super 3D	310
Oids	25	Swivel Art 3D	81
Pipe Dreams	16	The Print Shop 1.3.1	34
Sargon IV	28	Top Honors 1.01	56
SimCity 1.2	28	True Form 2.1	175
SimCity Graphics Vol. 1 or 2		TypeAlign for ATM 1.01	58
SimCity Supreme 1.2C	46	TypeStyler 1.5	111
SimEarth	29	Ultrapaint 1.0	115
Sky Shadow	28	Vitrus Walkthrough	CALL
Star Flight	38 18	Wet Paint Clip Art (each)	41
Tetris I.1 Vette!	28	HARDWARE	
Welltris 1.1	18	Apple Color Display Pol. Fi	lter 62
GRAPHICS		Cables all types	10
	227	Curtis MVP Mouse ADB	86 125
Adobe Illustrator 3.0 Adobe Photoshop	337 487	Datadesk 101 Keyboards Dest Personal Scanner	CALL
	CALL	Diconix M150 Plus Printer	449
Adobe Type Manager 2.0	S5	Digi-Video B/W	390
Adobe Type Reunion	37	Disk Express II	56
Adobe Type Set 1	54	Dove Marathon 030	20
Adobe Type Set 2	54	+, SE or II	475
Aldus Design Team		DoveFax Desktop	262
(Fh, PM, & Preprint)	875	Gemini Accelerator	CALL
Aldus Pagemaker 4.0	479	Grappler 9-pin	85
Art Clips 2	63	Grappler LX	125
Art Importer 2.0	84	HP DeskWriter Printer	699

#### CHECK OUR LOW

Most Of Our Prices Are The Lowest In This Magazine. If We Don't Already Have The Lowest Price, We Will Try To Match And Beat Any Advertised Price!\*

#### S3 DHL OVERNIGHT

Imagewriter Ribbons

NETWORKING/

(block & colors)	3	COMMUNICATION	ie.
(black & colors) Interfax 24/96 Modem	420	The second secon	
	309	Carbon Copy Mac	109
Kennect Drive 2.4	48	Data Club	195
Kraft ADB Joystick Label Writer Labels	11	Datalink Modems Flash 1.1	CALL
LabelWriter Printer	174		110
		Fontshare	125
LaserWriter II NT	3,669	LapLink Mac III	00
LaserWriter II NTX	4,895	Connectivity Pac	92
LaserWriter II SC	2,285	MacLink Plus Translators 4.	
Lightning Scan 400	357	MacLink Plus/PC	115
Little Mouse ADB	74	MacPrint TOPS Network Ve	er. 165
Little Mouse Plus	74	PhoneNet Connector	Section .
MacPro Keyboard ADB	107	DB-9 or DIN-8	- 31
MacPro Keyboard Plus	CALL	SupraModem 2400	99
Mac Recorder Sound Sys. 2.		Timbuktu 3.1	- 85
Mac Recorder Voice Digitize		TOPS Networking Bundle 3.	0 177
Macinware Case SE	70	TOPS Teleconnectors	District Co.
MacTRAC ADB	74	DIN-8 or DB-9	22
MacVision 3.0	230	Versaterm 4.1.1	87
Magnavox 14" Color Monito	г 490	White Knight Ver. 1.1	80
Mousetrak Mousepad 7 x 9	7	ALL STATE OF THE PARTY OF THE P	100
Mousetrak Mousepad 9 x 11	9	SYSTEMS	
MSF 300 GS Scanner	1589	Macintosh Classic 2/40	CALL
MSF 300 ZS Color Scanner	1850	Macintosh IIsi 2/40	CALL
OrchidFAX Modem	377	Macintosh LC 2/40	CALL
PassProof Left	63	27 2 27 20	
PassProof Right	63	UTILITIES	
PowerKey ADB	63	After Dark	22
Prometheus Modems	CALL	CanOpener I.I	59
Rapport	187	Capture 3.0	44
RasterOps complete line	CALL	Click Change	40
Ribbon Imagewriter 4-color	9	Copy II Mac 7.2	22
Rollermouse ADB	74	Disk Lock 2.0	1115
ScanMan Mac Model 32	345	Exposure Pro	67
SE Anti-Radiation Screen	52	FastBack II	116
SIMMs all types	CALL	Hot Keys	CALL
Switchboard	155	MacTools Deluxe	74
System Saver Plus platinum	63	Norton Utilities	79
Turbo Mouse ADB	105	Pyro!	22
Turbo Mouse Plus	105	Ouick Keys 2	92
UPS HOSE	209	Rival	47
UPS 370ci	320	S.A.M. Anti-virus	59
Vantage 1.5	49	S.U.M. 2.0 Utilities	91
Xceed for SE/30 (1024 x 768		Smart Scrap and the Clipper	
Xceed for SE/30 (640 x 480)			32
Xceed Hci Cache Card	259	Snap Jot 2.0	47
Acced fici Cache Card	239	Stepping Out II	62
MUSIC		Stuff-it Deluxe 2.0 Suitcase II	47
	- 04		74
Apple MIDI Interface	.84	Super Glue	91
Concertware + MIDI 5.1	93	Tempo II	
Encore	385	The Curator 1.05	69
Passport MIDI Interface	82	Virex	52

#### POLICIES

I. VISA, MASTERCARD or DISCOVER accepted. No sur-charge. Your card is not charged until we ship. 2. If we send a partial order, there's no second shipment charge. 3. All shipments insured at no

4. No sales tax charged for out of state shipments.
5. COD maximum \$1,000, cash or certified check. COD orders ship via UPS Blue Label unless UPS Ground delivers next day.

6. 120-day limited warranty on all products. Defective software replaced immediately. Defective hardware repaired or replaced at our discretion. Prices subject to change without notice. All items

change without notice. All items subject to availability.
7. Corporate and school purchases accepted, based on credit approval. To submit purchase orders, call our business office at 203-380-0280 or

800-258-0280, 9am-5:30pm EST. Shipping on corporate and school orders billed at cost.

#### SHIPPING

- Continental U.S. Add \$3.00 per order to cover DHL Overnight Service, unless UPS ground delivers next day. Some areas require an additional day. (UPS ground service available at
- ground service available at reduced rate per customer request.) Saturday delivery available to many areas upon request. Order by 5:30pm EST Monday-Friday and all (in-stock items) will ship that evening for overnight delivery, barring system failure, etc.

  Alaska, Hawaii, outside Continental U.S., APO and FPO: call (203) 380-0280 or write for shipning information.
- shipping information.

  Mail-in orders (especially from
- foreign countries), please furnish telephone or fax number.

"Advertised price" does not include typographical errors on the part of other vendors or prices that do not reflect higher shipping costs, credit card charges, or membership fees Final judgement remains with the manager on duty

Please circle 46 on reader service card.

24-HR FAX LINE 203-380-0197

699

Imagewriter II

550

# Aim with MacTel

ontact the professionals at MacTel Technology.
We handle only the best in Macintosh hardware, systems and peripherals. Names like Apple, Nikon, Radius, RastertOps, Wacom, PLI, Sharp and our own, top-quality Index brand.

We provide services such as international sales, service and banking; and qualified, reliable technical support (before and after the sale.) It's no wonder if the vast majority of our business is repeat business.



Elite series :

All INDEX Elite external Hard-Drives have an auto-Sensitive Power Supply and include MacTel HD Utilities, Backmatic V-2, AutoSave II and 14 Mb PD software.

			internal	externo
Quantum 3.5 "	80 Mb	12 ms	\$ 549	\$ 639
ProDrive HD	105 Mb	12 ms	\$ 499	\$ 589
FIOURIVE HD	170 Mb	12 ms	\$ 799	\$ 889
	210 Mb	12 ms	\$ 869	\$ 949

U 13 5347	320 Mb 16 ms	\$ 1399 \$ 1449	
Imprimis 5.25"	330 Mb10,7ms	\$ 1599 \$ 1699 RUN	NER
Wren Series HD	640 Mb 16 ms	\$ 1999 \$ 2099	
111011 001100110	1.2 Gb 16 ms	\$ 3199 \$ 3299	

#### ⇒AII INTERNAL DRIVES

include Bracket cables and software, everything

\*Fits only Mac II, Mac IIx & Mac IIfx. All INDEX external Harddrives are supplied with universal power supplies, for world-wide adaptability.

Backmatic V-2 and AutoSave II are registred trademarks.All INDEX "ELITE" HARDDRIVES ARE BUNDLED with Backmatic V-2 & AutoSave II software.

#### ■ DAT DRIVE 1.2 Gb System ••••• \$ 1699

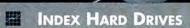
Tape back-up system from MacTel . Price includes on tape and retrospect

Removable & cartridges:

•MacTel 45R •PLI infinity Turbo 40 call for pricing

**Syquest Cartridges** 

Q 400.....



**Economy series:** All INDEX Economy drives include MacTel HD Utilities and 14 Mb PD.

			internal	external
Quantum 3.5"	52 Mb	12 ms	\$ 279	\$ 359 Slimline
ProDrive HD	80 Mb	12 ms	\$ 479	\$ 559
Proprive III	105 Mb	12 ms	\$ 379	\$ 459
	105 Mb	12 ms	\$ 479	\$ 559 Slimline
	170 Mb	12 ms	\$ 699	\$ 779
	210 Mb	12 ms	\$ 769	\$ 849
Imprimis 5.25"	425 Mb	12 ms	\$ 1499	\$ 1579
Wren Half- Height drives	425 Mb	15 ms	\$ 1499	\$ 1579
1 1 1 1 1 1 1 1 1	320 Mb	16 ms	\$ 1199*	\$ 1299*
Imprimis 5.25"	330 Mb	10.7 ms	\$ 1449*	\$ 1549*RUNNER
Wren Series HD	640 Mb	16 ms	\$ 1749*	\$ 1849*
	650 Mb	10.7 ms	\$ 2900*	\$ 3000*RUNNER
	1.2 Gb		\$ 2699*	\$ 2799*

Golden Triangle: DiskTwin ----- CALL





# tor your Apple solutions!

#### VisionPro Monitor Systems

When purchasing Systems, compare the options and features. VisionPro Color Graphic cards are manufactured under license for MacTel Technology and support Macintosh graphical needs now and in the future.

#### Video Graphic Systems

· 8-Bit Business System.

8 Bit Video Card non Upgradable, 20 \* Trinitron - 75 Hz

.....s2795

8-Bit SystemPro 20",

VisionPro\* VideoCard 20° Trinitron - 75 Hz

..... 3249



#### -8-Bit SystemPro SONY 19 ",

VisionPro\* VideoCard 19" SonyTrinitron (GDM-1950) - 75 Hz ..... 3625

⇒ 24-Bit VisionPro Interface Upgrade Kit w/ purchase of any systemPro ...\$ 600

\*All VisionPRO Interface cards have multi-monitor support (Sony 19"& Ikegami 20"), support BlockMode transfer & acceleration,Upgradeable 8-Bit to 24-Bit cards, Pan/Zoom 2X & 4X and virtual desktop. Business system video card offers Pan/Zoom 2X & 4X and virtual desktop.

Monitors

Apple 13" RGB \*\*\*\*\*\* 749 Seiko14" Trinitron CM 1445 Hitachi 14" MVX Super HirRes Monitor w./Titr & Swivel • • • • • • • • • 575



#### Video Interface/cards

8-Bit Vision ST 813 for 13" or 14" Monitor ... \$275

24-Bit Vision ST 2413 for 13" or 14" Monitor...\$375

Vision ST Upgrade Kit (8 - 24 Bit) ...... \$ 135 VisionPro 8 -24 Bit Upgrade Kit ...... \$ 700

#### Macintosh CPU's and Systems

- · Mac Classic ( fully loaded )
- . Mac | 51
- · Mac SE/30 · Mac II CI
- · Mac II LC · Mac | FX
- · LaserWriter II NT, NTX and Personal LaserWriter's
- Also fax/call for quote on complete Apple Macintosh productline and competitive pricing • Goverment • Universities
- · Corporations (on approval) bids requested •

#### INDEX MEMORY MODULES our SIMMS are manufactured in-house at our state-of-the art facilities.

.1Mb Surface Mounte /lowProfile. 70/80ns.lifetime warranty .....

• 1 Mb FX and laserwriter II. SIMM 70/80 ns

· 4 Mb SIMM' s [ all Mac's] Surface Mounted / -80 ns - bundled with Maxima lmin, 4 units for Maxima software)

. 1 Mb X 9 SIMM 70/80 ns

ALL INDEX SIMMS HAVE GOLD CONTACTS AND TRACES . LIFETIME WARRANTY .

NEW 1 Mb TI Microlaser PS 17&35 memory upgrade (Increase printing speed and download more fants |----\$

Complete Memory productine for PS/2, Compag, Toshiba, DELL, Zenith, Sun ... fox/call for avota

#### MacTel Extended Keyboards

make MacTel your keyboards connection 1

(delivered with French , German or Suisse system software)

English.....\$99

German ..... \$119 French

#### TEXAS INSTRUMENTS

MicroLaser PS-17

Suisse

\$ 1399 w/17 fonts ....

MicroLaser PS-35

\$ 1699 w/35 fonts

1Mb TI Microlaser PS card XL

\$ 89 17 & 35 memory upgrade ......

\$ 139 MicroLaser XL.

(increase printing speed and download

#### Ordering Informations



No suchana lei Visa or MaterCard. You credit card will not be channed and your order is ready to slive in No such argo for Visia or MatterCord. Your and cold call will not be charged until your indice is induly to high Intersection orders and only for deputs frames probability and the control of the contro



# MacLand

America's Largest Macintosh Hardware Source
Prices effective through May 1991

# Laser Printer Sale



#### ScripTEN PostScript® Laser Printer

\$1,599

- 10 Pages per minute
- 11 Font Families (35 typefaces)
- 3 megs of RAM
- Solid Blacks for graphics
- Letter, Legal and transparencies



#### CrystalPrint MacPublisher Laser Printer

\$1,699

- · 8 Pages per minute
- 11 Font Families (39 typefaces)
- 2 megs of RAM
- Adobe type one support
- Solid Blacks for graphics
- Letter, Legal and transparencies



#### CrystalPrint Publisher II Laser Printer

\$2,125

- 8 Pages per minute
- 11 Font Families (39 typefaces)
- 3 megs of RAM
- Adobe type one support
- Solid Blacks for graphics
- · Letter, Legal and transparencies



#### Microlaser

PostScript® Laser Printer

**PS17 \$1,449 PS35 \$1,749** 

- 1.5 Megabytes of RAM
- 6 pages per minute
- 17 or 35 typefaces available
- Letter, Legal and transparencies

AppleTalk Interface Included!



#### NEC SilentWriter 90

\$1,799

- 6 pages per minute
- Adobe PostScript
- 35 scalable fonts
- 2 Megabytes of RAM
- Letter, Legal, Envelopes, Transparencies, and Labels



#### QMS-PS® 410 PostScript Laser Printer

\$1,999

- 2 Megabytes of RAM
- 4 pages per minute
- Letter, legal, envelopes, and transparencies
- Auto switching between Macintosh and IBM.

PostScript® is a registered trademark of Adobe Systems Incorporated.

Visa, MasterCard, and American Express accepted NO surcharge. Your Credit Card will not be charged until your order is shipped. We accept COD orders, additional \$5.00 charge. AZ residents add 6.5%. All shipments made by Federal Express

Standard Air which is 1 to 2 day service. COD's Shipped by UPS 2 day air. Call for shipping costs. Products purchased in error are subject to a 20% restocking fee. All prices subject to change without notice. All products subject to availability.

# The Reasons You Should Buy From MacLand...

Price—
Because of our multi-million dollar buying power, we purchase large volumes of quality hardware at low prices and pass the savings on to our customers.

Delivery—
We offer Same Day
Shipping on all in stock
items if we receive your
order by 3 pm Mountain
Standard Time. ALL
credit card orders are
shipped by FEDERAL
EXPRESS STANDARD
AIR service which
means you get your
merchandise fast!



Inspected & Tested by MacLand Technician No. 4 Technical Support—
MacLand has the best technical support, period. We provide you with technical support BEFORE AND AFTER your purchase. Best of all, to assure you the high est quality, our trained technicians test ALL hard disk drives for quality and viruses before we ship them to you.

# Hard Disk Drive Megabyte Sale! Quantum Imprimis

 Quantum 40 19ms
 \$299
 \$399

 Quantum 105 19ms
 \$399
 \$459

 Quantum 120 15ms
 \$589
 \$689

 Quantum 170 15ms
 \$679
 \$779

 Quantum 210 15ms
 \$789
 \$889

Quantum drives have a 2 year warranty!



Imprimis Drives Now Have a TWO Year Warranty!

effective on all drives purchased after 3/1/91



SyQuest 42 Megabyte Removable Hard Disk Drives

\$439

Cartridge not included

30 DAY MONEY BACK GUARANTEE ON ALL IMPRIMIS, QUANTUM AND SYQUEST HARD DISK DRIVES

No questions asked. If you are unsatisfied with any of these drives for any reason you may return them within 30 days of your invoice for a full refund less shipping.

Upgrade your Mac's Memory
Simm Sale
\$45

FREE! Included with your Simm order is our 22 page, step by step, easy installation guide.

SyQuest Removable Cartridges \$64

Will fit ANY 44 Removable Hard Disk Drive

For Ordering and Technical Support Call 1-800-333-3353 (FAX #602-345-2217)









#### **Accelerators**

DayStar Digital
Fast Cache Ilci\$269
PowerCache Ilci 40 MHz \$929
PowerCache Ilci 50 MHz\$1,649
25 MHz Powercard 030 \$1,125
33 MHz Powercard 030 \$1,275
50MHz Powercard 030\$1,949
Radius
Accelerator 16 for Plus/SE \$599
Accelerator 25 for SE\$999

#### **Fax Modems**

289
279
419

#### **Scanners**

Caere	
The Typist	\$459
Microtek	
300GS	1,249
300ZS\$1	
Abaton	
300GS	1,199
Hewlett Packard	
ScanJet with interface\$1	,59

#### **CD ROM**

NEC	
Portable CD with Interface	 \$44
Toshiba	
External CD with Interface	 \$49

#### UPS

Safe Pov	ve	r	s	y	S	t	e	n	15	3					
Safe 250															\$189
Safe 400	S.												,	٠	\$369

#### **Monitors**

	Magnavox
•	TWO YEAR WARRANTY
	14" Color Monitor \$43
	NEC
	MacSync 14" Color Monitor \$439
	Seiko
	14" Color Monitor

\*while supplies last frequires nubus card

> To Order Call 1-800-333-3353

#### **Monitor Systems**

Magnavox
TWO YEAR WARRANTY

14" Color Monitor with 8 bit Video
Interface Mac II family† . . . . \$699

14" Color Monitor with 24 bit Video
Interface Mac II family† . . . . \$799

SE/30 8 bit Video System . . . . \$799

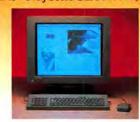


Radius Two page display w/Interface\$1,299 Pivot with Interface
RasterOps 264 ColorBoard *\$395 364 ColorBoard *\$875 8S ColorBoard\$345 24S ColorBoard\$545 24L ColorBoard\$2,695 ClearVue Classic or LC\$1,265 We carry the full line. Please call for the lowest price!
SamSung 15" Full Page Monitor with Video Interface\$399 Now Available for Mac Plus, SE, SE/30 and Mac II Family. Ilsi with nubus adapter\$499 Limited Supply—Offer good while supplies last
Sigma Designs PageView GS



#### Mega Graphics

Rival 19" Monochrome	.51	,095
Rival 19" GrayScale Mac II	.\$1	,795
Rival 19 " GravScale SE/30	.\$1	,995



#### **Printers**

#### Hewlett Packard DeskWriter \$679



NEC SilentWriter 90	\$1,799
QMS QMS-PS®410 PostS	cript \$1,999
Qume CrystalPrint Publisher ScripTEN PostScript Seiko Smart Label Printer	t\$1,599
Texas Instruments PS17 Microlaser with interface PS35 Microlaser with interface	\$1,449

#### Input Devices/Mice

Articulate Systems Voice Navigator
Kensington
Turbo Mouse
Curtis
MVP Mouse ADB
Mouse Systems
ADB Track Ball
Little Mouse
PageBrush Mouse/Scanner Call

#### Keyboards

Key Tronic	
Mac Pro Plus	.\$139
101 Keyboard	\$125

#### Modems

CMS 2400 Baud Ext	\$109
Anchor 2400	.\$159

# MacLand

sale!

## TEXAS INSTRUMENTS microLaser

microLaser
PostScript® Laser Printer

- 6 Pages Per Minute
- Letter, Legal, Envelopes, and Transparencies
- Optional Secondary Paper Drawer
- Adobe PostScript and HP LaserJet Series II
- Small Footprint
- 17 or 35 scalable fonts
- 1.5 Megabyte of Memory
- 300 Dots Per Inch



\$1.449

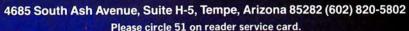
\$1,749

AppleTalk Interface Included

For Ordering <u>and</u> Technical Support Call 1-800-333-3353 (FAX #602-345-2217)







#### **PRINTERS**

The Nation's Largest & Fastest Growing TI microLaser Dealer!!!!

TI microLaser PS35

MacUser #1 Personal Printer (4.5 Mice)

TI microLaser XL Call!

16 Pages per Minute & SCSI Portl TI microLaser PS17

\$1375

\$2050

We stock all accessories & supplies.

Epson EPL-7500 (RISC Fast!) Call! NEC Silentwriter II/90 & II/290 Call!

**QMS PS410** 

CalComp Colormaster Plus Call! **Kodak Diconix Color 4** Call!

#### MONITORS

E-Machines T16 \$1395 \$2095 E-Machines TX16

Prices Reflect Trade In. Call for Details.

MegaGraphics Rival 19" \$1095 NEC MacSync \$455 RasterOps Systems Call! Seiko 14" w/RasterOps 245 \$995

Sigma L-View Multimode \$1395

SuperMac Systems Call!

# SIMMS

4 Meg \$175

with trade in Call! Meg

Lifetime warranty

#### **ACCELERATORS**

Mac II, IIx, Ilex, Ilci

DayStar Fast Cache Ilci DayStar 40 MHz PowerCache Ilci

\$250 Trade-In on Fast Cache Ilci Cards!!

DayStar 25 MHz PowerCard

DayStar 33, 40 & 50 MHz PowerCard DayStar SCSI PowerCard (O Meg)

I<sup>2</sup>R 32K IIci Cache Card

Sigma DoubleUp Data Compression Card

Mac SE, Plus

I<sup>2</sup>R SE/FX 40 MHz 68030

(with 68882, 32K Cache, 4 SIMM Sockets!!)

NewLife SE 16 MHz 68030 (w/4 SIMM Sockets) \$395 NewLife SE 25 MHz 68030 (w/4 SIMM Sockets) \$895

NewLife SE 33 MHz 68030 (w/4 SIMM Sockets) Call!!

#### INPUT & OUTPUT

Æ QuadraLink \$199 DayStar Digital LT200MC Call! DayStar Digital LT200PC Call! **EMAC Silhouette** Call! \$105

**Kensington Turbo Mouse** VoiceLink Voice Navigator II

**Wacom Tablets** 

#### CD-ROM

Chinon \$589 **NEC Portable** \$395 Toshiba \$695 Call!

Pioneer DRM-600 Minichanger

TI microLaser Memory

#### FAX MODEMS

Challenger VP24/96 (9600 send fax) Abaton 24/96 InterFax \$295 Æ DataLink LC \$245 DoveFax \$275 Global Village TelePort

\$175 Orchid Fax Modem \$425 Prometheus 9600M Plus \$649

Prometheus 14.4/9600 Ultima

#### **OPTICAL DRIVES**

**FWB HammerDisk 600S** \$4950 Pinnacle Micro Call! Mass Micro MO Call! Storage Dimensions Tahiti \$4785 Storage Dimensions Worm \$2725 SuperMac LaserFrame \$4499 Optical Cartridges \$155

#### **SYQUEST**

45 Meg Removable Cartridge

#### 44 MEG REMOVABLE DRIVES

**Eagle Syquest Drive** Mass Micro DataPak

FWB HammerDisk44

\$499 Call! Call!

\$269

\$895

\$995

Call!

\$995

\$179

\$199

\$1995

Call!

Call

Call!

#### **SCANNERS**

Abaton Scan 300/Color \$1395 **Caere TYPIST** \$465 Epson ES-300C Call! Howtek Call! Microtek 300ZS Call UMax UG80 (256 Grey Scale) \$995 **OmniPage** \$479

#### TI NOTE

As the nation's largest Texas Instrument dealer, our prices are always subject to being lowered. Please call for current pricing.

#### DATA MODEMS

Challenger VP2400 \$69 Zoom VP2400 V.42 bis (MacUser #1) \$175 Hayes V-Series Ultra 9600 \$795 Practical Peripherals 9600SA \$499 US Robotics 14.4/9600 V.32 \$695

## **MACCENTER**

The Center Of The Macintosh Universe

800-950-37

Fax 512-476-3726 International Orders 512-476-7466 Please circle 77 on reader service card.

MasterCard & Visa accepted. NO surcharge for MasterCard/Visa. Corporate, Government & University P.O.'s accepted with approved credit. All returns require approval and are subject to a restocking fee.

8:30 am - 7:00 pm CST M-F 10:00 am - 4:00 pm CST Sat. Sunday: Call, you may get lucky 812 San Antonio Street; Suite 402 Austin, Texas 78701-2224 (where else?) Prices volid 3/29/91 - 4/28/91

Wholesale 54 brings you the highest quality hard drives available. And, a multi-million dollar inventory allows us to bring them to you at the lowest prices in the industry.

#### External drives include:

- . zero-footprint solid metal case
- dual SCSI ports for daisy-chaining
- . external LED
- , SCSI cable
- , power cable
- ONTRACK formatting/partitioning software

#### Internal drives include:

- , mounting brackets
- . SCSI cable
- ONTRACK formatting/partitioning software

# Quantum

Internal

External

40Mb \$1

219 289

80Mb

349 399

105Mb

349 \*399

210Mb \$699 \$779

\*Our Quantum drives are all state-ofthe-art "Pro Series" half-height drives.

## ALL DRIVES ARE NEW!!

# Maxtor

External

340Mb

°1295

660Mb 16ms 1895 \$

# Seagate WREN

337Mb 16ms °1395

613Mb

1749

676Mb

\$1999

1 Gig 15ms

°2659



# **SyQuest**

44Mb removable drive with cartridge 459

### **MICROPOLIS**

External

320Mb

1219

600Mb

1749

1.2gig

° 2699

Toll-free in U.S. and Canada

# 800-955-0054

Mailing Address: 520 S. 52nd St., Ste 204 Tempe, AZ 85281 FAX:(602) 350-1191







# WIIOLISALLE

One of the oldest names in the storage business!



Policy: Prices, terms & availability subject to change without notice. All products carry a manufacturer's warranty. No returns on opened software. TERMS: No surcharge for MasterCard/VSA. Shipping: UPS or FedEx only. APO/FPO orders accepted. PO's accepted; some restrictions apply. DOA equipment immediately replaced upon return. Product must be undamaged & in original packaging and condition. Personal checks will delay shipping 10 days.

CG591

## **Personal Service • Lowest Prices Money Back Guarantee**

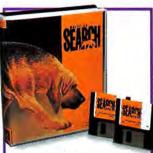
## Software

	ABRACADATA
	Design your own Home Landscape,
	Architecture or Interiors 58
	ADOBE SYSTEMS
	Adobe Illustrator 3.0.with ATM 339
	Adobe Type Manager 55
	Adobe TypeSet 1 or 255
	Adobe Type Align58
	StreamLine 2.0 112
	Photoshop489
	FontsCALL
	Type On Call49
3	ANDROMEDA
	Master Tuner55
	A CANADA AND A CAN



24/96 FAX MODEM . A 2400 bps data modem! A 9600 bps SEND/RECEIVE fax! Includes Maxfax software and its many exclusive features, like grey scale capability, plus MAcKNOWLEDGE "communications software and a Macintosh cable. A complete communications package!

		-
	ALDUS	
	Pagemaker4	89
	Freehand 2.0 3	19
	Persuasion3	19
	ALADIN	
	Shortcut 1.5	45
	Stuffit Deluxe 2.0	62
	ASD	
	FileGuard 2.51	37
	ASHLAR	
	AshlarVellum5	99
١	ASHTON TATE FullWrite1	2
	FullWrite1	35
	Full Impact1	35
	AVERY	
	MacLabelPro	
	Labels AvailableCA	LL
	BRODERBUND TypeStyler1	40
	CAERE	12
	OmniPage4	00
	Typist4	
	CARAVELLE	03
i	Mac To Mac (Special 10 pak price) 2	10
	CERES	
	Inspiration1	15
	CE SOFTWARE	10
	Quickmail 10 User2	98
	QuicKeys	
	DiskTop 4.0	
	CHIDEOET	
	TurboTax Personal/1040	49
	CLARIS	
	MacWrite II1	39
	FileMaker Pro2	109
ŕ	MacDraw II2	75
	ClarisCad6	25
	SmartForm Designer2	75



MULTI-AD SEARCH Thumbnails or text display. Supports EPSF, TIFF, PICT, and MacPaint files.



graphic designers and illustrators CUSTOM APPLICATIONS
Freedom of Press .....
Freedom of Press ProFreedom of Press Lite .
DELTA POINT DeltaGraph Taste Recognize! DynaPerspective 3D FARALLON Media Tracks Timbuktu ...... Timbuktu Remote 2.0 .... 122 Timbuktu 3.1 30 Pack FRANKLIN SOFTWARE 57 Language Master



Special 10-pack price!

Network Desk Accessories: FileShare, a fast and simple tool for sharing files on any AppleTalk network, features direct multiple file transfers, direct multiple life transfers, background operation and security. TextPhone is a text conferencing tool that allows users on any AppleTalk network to talk to each other and leave messages.

FREESOFT	
White Knight	81
HYPERPRESS	
PictureLink1	99
ICOM SIMULATIONS	
On Cue	34
TMON	
HyperTMON	56
HyperTMON INNOVATIVE DATA DESIGN	
Dreams 1.13	
MacDraft 2 1	99
INSIGHT DEVELOPMENT	-
MacPrint	89
INSIGNIA	
Soft PC2	42
INT'L BUSINESS SOFTWARE	
Dataclub - 3 user pack1	75
Dataclub 10 Pack4	99
LANGUAGE SYSTEMS	90
Fortran with MPW3	98
Wild Things 1	19
LEXPERTISE	-
MacProof1	04
MACROMIND	7
Macromind Director 6	25
Accelerator1	25
MAGNA	
Empower I 1	19
Empower II1	
MAINSTAY	-
MacFlow 3.5 1	68
MANAPRO	
General Ledger4	80

MICROCOM
Carbon Copy Mac115
Virex55
Virex 10 Pack345
MICROFRONTIER
Enhance 199
MICROLYTICS
Inside Information 59
Gofer52
Wordfinder34
MICROSOFT
Word 4.0
Excel
Help for Excel with Excel purchase . 25
Power Point248
Microsoft Office
MULTI-AD SERVICES
Multi-Ad Creator498
Multi-Ad Search
Wulli-Ad Search100



Nisus word processing has unlimited undos, noncontiguous selection, an integrated thesaurus, foreign language dictionaries, PowerSearch and a builtin word processing language. Only Nisus® offers graphics with so many page layout capabilities.

IOW SOFTWARE	
ScreenLocker	43
Now Utilities	74
DESTA CORPORATION	
Double Helix	365
Data Desk	
LDUVAL	ondina 145
Videopaint	199
N TECHNOLOGY	
On Location	71
PCODE	
EZ Vision	98
PARACOMP	
Model Shop	369
Filmaker	
Swivel 3D Professional	
PARAGON	
	238



MULTI-AD CREATOR . MULITAD CHEATOH
Power, speed, precision and colorseparating abilities make Multi-Ad
Creator " the top-rated DTP program.
Multi-Ad Creator is the high-end choice
for making ads—or any page—fast. "If
you create ads, get it."—MacUser

PEACHTREE SOFTWARE	
AtOnce	275
Insight Expert per module	
PREFERRED PUBLISHING	
DAtabase	65
Exposure Pro	
Personality!	49
PRE-PRESS TECHNOLOGIES	
SpectreSeps—Quark/Pagemaker .	225
SpectreScan	325
QMS	
UltraScript	99
QUARK	
QuarkXPress	519
REALITY TECHNOLOGIES	7
WealthBuilder	142



highest rating of 5 mice.

DiskDoubler 4:	2
SERIUS CORP.	
Serius Programmer19	4
Serius Developer32	i
SITKA	•
SIIKA	
Network Bundle for MAC18	5
SOFTVIEW	
if:X Forms Designer16	4
Business Expense Reports4	
MacInTax5	
Personal Tax Analyst4	ä
Quarterly Payroll Tax8	
13 States availableCAL	L
SOFTWARE DISCOVERIES	
RecordHolder Plus7	8
SOLUTIONS INTERNATIONAL	-
	2
Smartscrap5	~
SuperGlue II6	
The Curator6	9
Accessed come.	
PRESENTER	



SALIENT



WITH MACRENDERMANTM Presenter Professional with MacRenderMan gives you the fastest and most intuitive way to illustrate and present your ideas in 3D. Includes freeform 3D Bezier illustration, Photorealistic rendering, Path/Object animation, and Raytracing.

COLUMN TO THE REAL PROPERTY OF THE PERSON OF
STRATA
StrataVision 3D34
StrataVision 3D/MacRenderman . 108
CTUDIOTDONICC
Colorset
SUPERMAC
Pixel Paint Professional38
Pixel Paint
SYMANTEC
Norton Utilities8
SAM 6
SUM II
Think C 4.0
SYSTEMS COMPATIBILITY
STSTEMS COMPATIBILITY
Software Bridge7 TACTIC SOFTWARE
TACTIC SOFTWARE
Magic Typist3
Icon It!3
Sound Clips3
ArtClips3
ArtFonts3
FontShare 12
TIMEWORKS
Publish it! Mac21
Publish it! Mac Easy 2.0 10
T-MAKER
Write Now11
ClickArt From 3
VERTICAL SOLUTIONS
FastLabel7
FastEnvelope3
VISUAL INFO DEVELOPMENT
PresenterPro & MacRenderman , 171
WORDPERFECT CORP.
WordPerfect26
ZEDCOR
Desk19

Please circle 161 on reader service card.

Super Super SIMMS Sale! 80 nanoseconds

Corporate Medical Plans: Open an account within 24 hours Volume discount pricing Fed. ID# 95-4183196

School purchase orders accepted

# Takes Care of You!

For the LOWEST mail order prices, call... (800) 825-6227

FAX (818) 501-3760 or (818) 377-7865

#### **Hardware**



PUBLISHER CLASSIC 15" ...... \$695 PUBLISHER CLASSIC 19" ..... \$1095 The Publisher Classic is the first display interface combining the Macintosh Classic and a large screen display. This system will allow the user to produce professional documents at a fraction of the cost of other systems.

APPLE	
Mac Systems - Lowest Pricin	LIADD
ABATON	9 OALL
Interfax Fax-modem 24/96	335
256 Grey Scale Scanner +Int.	
300/Color & Grayscale Scanne	
PostScript Laser Printer	
ABCOM	1995
Extended Carry Case for SE	76
Carry Case for Mac Ilcx / Imag	owtr 76
Dust Covers	
ANIMAS	OALL
True Color Hand Scanner	562
ARTICULATE SYSTEMS	502
Voice Navigator II	569
Voice Link	
CAERE	170
The Typist	469
CAYMAN SYSTEMS	403
GatorBox	1890
GatorCard E/II for Mac II	
COMPATIBLE SYSTEMS	402
Ether Route	1045
Ether Plus	
Ether II	
Culci II	010



MARSTEK-800/MAC-64(800dpi) . \$399 Scan directly from Enhance with the only 800 dpi hand scanner. And with 64 gray scales, you'll be amazed at how true your image will be.

- Visa. Mastercard & Amex accepted · Credit card is not charged until order is
- shipped. California residents add 6.75% sales tax
- Hours: Mon-Fri 9:30-11 EST Sat 11-6 EST
- Call (818) 501-6581. FAX (818) 501-3760
- Compatibility not guaranteed.
   All prices & policies subject to change without
- notice.

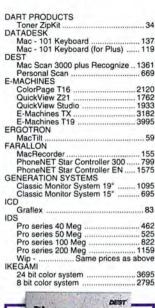
#### Shipping

S3. Airborne Overnight continental US.
 Hardware over 10 lbs will be shipped ground.
 Same day shipping.

Call for R.A. number before return Restocking fee may apply.

#### Money Back Guarantee

Most products have a 30-day money back guarantee. Please inquire when you order





Recognize! omnifont OCR software Hecognize: ormitont OCH software does your typing for you by reading virtually any scanned document into your Macintosh" computer. Even documents with mixed graphics and text, headlines, multiple columns, bold and italic type are accurately scanned and automatically formatted for use in your favorite word processing application.

IOMEGA	
Benoulli II Transportable	
Benoulli II Dual 44 Meg	CALL
I-PROTECT	
Radiation Shield for SE/P	lus 69
Radiation Shield for MAC	11
KENSINGTON	
Turbo Mouse	106
Mac II Stand & Cables	
Masterpiece Mac II	
KEYTRONICS	
MacPro Plus	120



One-of-a-kindl Breakthrough combination of full-page hand-held and 10 page sheet feed scanner in one unti-licludes hand-held scanner, auto sheet feeder, Recognizel omnifont OCR

KINETICS	
	484
KODAK	
Diconix M150 Portable Print	
Color Printer	1172
MARSTEK	
Mac-800	399
MASS MICRO	
ColorSpace	CALL
Data Pak	699
QuickImage 24	699
MEGA GRAPHICS	
19" Rival System, SE,SE/30	0,11 1085
16" Sony Color II, Ilcx, SE3	0 2569
MICROTEK	
FULL LINE AVAILABLE	CALL
MSF300ZS Color Scanner v	with
PhotoShop	



Award Winner Best Communication Product of 1989, the Interfax 24/96 is HOT. Includes 2400 bps data modem with MNP level 5 error correction that sends and receives faxes at 9600 bps. Full one-year warranty on parts and

MICROTECH	
Nova (full line) LOWEST	PRICES
EuropaLOWEST	PRICES
MemoryLOWEST	PRICES
CD ROMLOWEST	PRICES
MICROTOUCH	470
UnMouse	1/9
MOUSE SYSTEMS	550
PageBrush Scanner Little Mouse or ADB Mouse	559
NEC	
MacSync	400
CDR35 Portable CD Rom	475
CDR72 Intersect External CD	
ColorMate PS	
Silent Writer 2 model 90	1795
NEWGEN	
Turbo PS 400	3999
Turbo PS 480	
ORCHID TECHNOLOGY	
MacSprint II	209
	435
PLI (PERIPHERAL LAND)	
Infinity 40 Removable Hard D	rive 699
Cartridges Optical Drive 635 Mb	79
Optical Drive 635 Mb	3/95
PRACTICAL SOLUTIONS	00
Cordless Mouse Strip Switch	92



The new affordable 300/color scanner is designed to handle all of your scanning needs. Provides 24 bit color and 256 grayscale, line drawings and text. Free additional 90-day on site warranty. Bundled with award winning Photoshop. (includes interface kit)

PROMETHEUS	
24/96 Fax/Modem265	
ProModem 2400 Modem 115	
ProModem 9600 M Plus MNP 665	
96/96 Fax/Modem 665	
Ultima 14,400/9600 Modem/Fax 635	
QMS	
ColorScript 100 7495	
PS 8102995	
QUICKTEL	
2400 Baud Modem inc. software 119	
24/48 Modem/SendFax & software 129	



PAGEBRUSH COLOR . \$559 The PageBrush/Color scanner scans up to 4096 colors with 400 dpi. Image enhancement and processing are possible with features like palette optimization, brightness/contrast control and gamma and hysteresis correction. The PageBrush/Color solution is acomplete image studio

ADIUS	
FULL LINE AVAILABLE CA	ALL
ASTEROPS	
FULL LINE AVAILABLE CA	
24L System 19* Trinitron C.	
Accelerator 16M DRAM Exp Kit . C.	
ClearVue/GS Grey Scale 19" C.	
ClearVue/SE System 19" C.	
ClearVue/II System 19" C.	
Video Color Board 364 Special	899



ABCOM CARRYING CASES These sturdy cases are constructed of cordura nylon, backed with 1" foam padding and use metal hardware and heavy duty zippers for the best protection available. (navy or black)

SHARP
JX-450 Color Scanner & Int 5195
JX-300 Color Scanner & Int 2395
Color Printers Call
SHIVA
Fast Path 4 1899
SIMMS
1 Meg.Simms 100, 80,70 ns Call
SONY
1304 Color Monitor 689
SUPRA
2400 Baud External Modem 109
2400 Baud Ext. MNP 155
TOTAL SYSTEMS
Gemini 20MHz 030CALL
Gemini 25MHz 030CALL
UMAX
UC300 Scanner 1675
WACOM
Digitizing TabletsCALL
6"x9" Tablet CALL
12"x12" ElectrostaticCALL
12"x12" Standard Surface CALL



Sun Valley, CA 91352 (818) 501-6581 Federal ID# 95-4183196



# MacProducts US



#### 1 MB SIMMs \$44



LIFETIME GUARANTEE 70/80 ns. Call f	or most current price.
4 MB SIMMs/ 4MB IIfx SIMMs	\$225/ \$225
3 MB Portable RAM	\$899
Portable RAM 1-8 MB	call
4 MB Classic upgrade	\$199

#### **Magic Networking**



#### Magic Communications



Fully Ha	yes compatible. Includes two year warranty.	
2400 / 1200	/300 baud. Auto answer/dial\$75	
2400/4800	SendFax/ Modem\$89	
2400/9600	SendFax/ Modem\$99	
2400/9600	Send & Recieve Fax Modem\$179	



V.42 bis MNP-5 2400 Modem- send and receive up to 9600 baud. LAPM & MNP error correction, asynchronous operation, auto adaptive equalization. Two year warranty. V.42 bis MNP-5 Modem.

#### Magic Hard Drives \*\*\*\*



A/UX compatible, includes Disk Manager Mac formatting software, 10Mb free software, surge protection, External SCSI selector & Two year warranty

SCAL SCIECTOL, CC	I WO year warrant	
Quantum	Internal	External
40 MB hard drive	\$279	\$399
52 MB low profile HD	\$319	\$429
80 MB hard drive		
105 MB hard drive	\$429	\$529
105 MB low profile HD	\$529	\$629
170 MB hard drive	\$799	\$899
210 MB hard drive	\$889	\$989
300 MB CDC hard drive	na	\$1850
300 MB WrenRunner	na	\$1999
600 MB hard drive	na	\$2350
1.2 gig hard drive		\$2795
Internal kit \$29		10,100

#### Magic 45R Removable \*\*\*\*



Portable, fast, & affordable removable media. Syquest mechanism. 2 year warranty. 45 MB removable drive . \$499 Syquest cartridge.

#### Magic Tape Backup ###

MagicTape 60	\$679
MagicTape 150	\$699
MagicTape 525	\$999
MagicTape 1.3 gig/ 2.4 gig	\$1895/\$2895

#### **MacProducts USA Advance** Replacement Warranty

24 hour replacement of your damaged driv Virex bundle only \$15 with any Magic purchase. not included in drive price.

#### RailGun 030 Accelerators



4 X faster than Dove Marathon

We can give your original Mac new performance with our Magic RailGun '030' Accelerator for the Plus, SE, & Classic. 16.25. & 33 MHz RailGun... starting at \$499 16 MHz 68881/68882 coprocessor. \$99/\$149

#### Magic Video Solutions

THE THEO DOLL	
MagicView 19" B&W Plus W/card	\$999
Magic 8-bit color card II/ SE30	\$269/\$329
Magic 19" 8-bit color card for II	\$499
14" NEC MacSync with tilt/swivel	\$449
14" Goldstar with tilt/swivel	\$379
19" Color Triniton Monitor	\$2099

#### Magic Scanners

MagicScan 256 grayscale with Imagestudio software\$1099 MicroTek 300ZS 24-bit Color with Photoshop......\$1749

#### Macintosh CPU's

IVILLE		CI C C
Mac Classic	\$975	36 month lease \$30
Mac Classic 2/40	\$1349	36 month lease \$44
Mac LC	1799	36 month lease \$64
LC coprocessor board	w/ purcha	se of coprocessor\$29
Mac IIsi 2/40	\$2749	36 month lease \$92
Mac Ilsi 5/80	\$3399	36 month lease \$115
Mac Ilci (call for new price	e) <del>\$4199</del>	36 month lease \$140
Mac IIfx (call for new price	\$6299	36 month lease \$210



Leasing prices reflect avg monthly rate, Businesses only, \$3000 minimum purchase.

#### HARDWARE & SOFTWARE MacProducts USA carries over 8,000 products for your Macintosh

Accelerators	
LC coprocessor board w/purchase of C	
25mhz 030 II, IIx/ IIcx 109	9/1489
	9/2559
Daystar FastCache IIci	269
Daystar PowerCache IIci 40mhz	969
Daystar SCSI Powercard 0 MB	1133
Magic RailGun 030 Accelerator 16	499
Magic RailGun 030 Accelerator 25	699
Magic RailGun 030 Accelerator 33	1099
Connectivity/Network	
3 Com EtherLink/NB	431
Asante Maccon+ IIE, ET	345
Astante 10 T Hub	989
Avatar MacMainFrame II Coax Gateway	1789
Cayman Gator Box	2019
Cayman Gator Card Ethernet Dayna EtherPrint EP-T Single	449
Dayna Port E/II	385
Dayna Port SI	399
DCA MacIRMA II	835
Farallon StarController EN	1594
Farralon EtherNet Card	419
IBS DataClub 10 Pack	549
Magic MagicNet Node 8Pin	17
Nuvotech Nuvolink II	285
Nuvotech TurboStar	1059
Oracle Mac Developer	1.15
Oracle Mac DB	411
Racal-Interlan Mac Connect	337
Shiva Ethergate	1725
Shiva Fastpath 4	1999
Sirka Tops Network Bundle IBM Sirka Tops Network Bundle Mac	169
White Pine Exodus X Windows	199
Writte Fille Exocus X Windows	369

CD Rom CD Rom
CD Technology Porta Drive
Grolier Electronic Encyclopedia.
NEC CDR-72 Drive/Interface
NEC Port CDRom/interface
NEC Port CDRom/interface
Toshiba CD Rom Drive
Wayzata CIA WorldFact Book
Whole Earth Catalogue
Many Others Available **Digitizers** Calcomp 12x18 Tablet Calcomp WIZ Tablet

Farallon MacRecorder Farallon Media Tracks Kurta 8.5x11 Emulation/Translation nsignia Access PC nsignia SoftPC with AT/EGA Drange Micro Mac 386 Mouse/Keyboard 

AE DataLirik External ACA
AE DataLirik Internal 2400
AE Quadralirik
Dove DoveFax Desktop
Dove DoveFax Desktop
Hayes Utserie selov VzeBis x, 25
Incornin Internal 2400 Modern
Megic 2400 with SendFax
Orchid Technologies Fax Modern
Orchid Technologies Fax Modern
Practical Peripherals 9600 V320V42
Promethius ProModern 2400 Internal
Shiva Netmodern V32
Bebooks Courter HST 14.4 V.42BIS
US Robotles Courter HST 14.4 V.42BIS
US Robotles Courter HST IN INCORPORATION
DE REMANDARY COURTER ST IN I Display/Video Systems DISDIB/Y/VILLED DYSLETING
J Timitism Monitor
Amdek FowerPage Card I,SE,SE30'
Amdek 14 White Monitor
Calcomp 21 Color 8 Bit System
Calcomp 21 Grey 8 Bit System
Magic 8 bit color
Magic 8 bit color
Magic 8 bit color 19
Magic 8 bit color 19
Magic 8 bit color 19
Mass Micro Colorspacel-I
Mass Micro Colorspacel-I
Mass Micro Easy Victeo 8

Mass Micro Ouickimage 24
NEC MacSync 14 Cofte PiC
Radius Direct Cofter 24
REC MacSync 14 Cofter PiC
Radius Direct Cofter 24
Radius Prect Cofter 24
Radius Prect Signal
Radius Precision Cofter Calibrator
Radius OuickCofter Graphics Acce
Radius Two Page Display 19
Radius Cofter Display 19
Radius Cofter Display 19
RasterOps 264/RE30 Card
RasterOps 264/RE30 Card
RasterOps 264/RE30 Card
RasterOps Cofter 26
RasterOps 26
RasterO Printers

Scanners Carer Typist Hand Scanner Cannon IX-30F Scanner w/interface Magic Scan 256 Grey Microtek 3002 Sharp JX-300 Storage Solutions

Dayna Dual Drive 1,2Mb/1,44Mb
Dayna Single Drive 1,44Mb
Tujitsu 800K Flopy
Irivin Magnetics 80mb Tape
Kennect Drive 2,4
Kennect Text Rapport
MassMicro Databa'k II Removable
Micronet 1,3GB Tape Backup
Pinnacle Micro REOSBO interface
Pinnacle Micro REOSBO interface
Pinnacle Micro REOSBO interface
PL Turbo Floppy
LI Tur Accesories, Disks, Ribbons

Accesories, Disks, Ribb 150 Meg Backup Tapa 60 Meg Software

Freedom of the Press Freedom of the Press Freehand Leonard SmartWorks MacProject II MacRenderMan MacroMind Director MicroSoft Complete Line MiniCad +

Norton Utilities Persuasion Pixal Paint Pro Quark Express 3.0 Retrospect Remote Solific EGA/AT Bundle StrataFlight StrataVision 3D Stuffit Delives Strata-light Strata-Vision 3t Stuffit Deluxe Swivel 3D Pro Timbuktu Type-Styler Virtual

HOW TO ORDER Order Call: 1-800-622-3475 or (512) 343-9441 Cust. Service: 1-512-343-9441 ext 631 Tech. Support: 1-512-343-9441 ext 628 24 hr Fax Line: 1-512-343-6141 Tech. Support: 1-512-343-941 ext 628
24 hr Fax Line: 1-512-343-641
Intl. Orders: Call of fax for price and shipping
irroughout he free world. Leasing: Yest Flexible
terms & quick approval make it easy to lease. Please
all for orders were 5000 Taxt. No tax charged
outside of Texas. Texas Residents add 8th. Payment:
Vsa, Mastercard, Doscover. You credit card is not
charged until your order is shipped! Pre-pay
company and personal checks, cashers checks.
Wire transfers, approved company and institutional
PO's (Net 15). So charge for COD. cashers, checks.
Shipping: We ship Federal Express. Other major
camers available. \$10 minimum shipping charge.
Returns: All returns require RIMA# from oustomers
earnice. Please call (1512) 343-341. Ext 631. In
returns subject to a restocking fee. Shipping and
handling not refundable. Opened software is not
returnable. All Magic products (except memory)
carry a 30 day money back guarantee (call for terms) in terms. Terms: Items valiability and price subject to
change without indice. Some products subject to change without notice. Some products subject to

back order.
Address: MacProducts USA
8303 Mopac, Suite 218
Austin, Texas 78759-8369



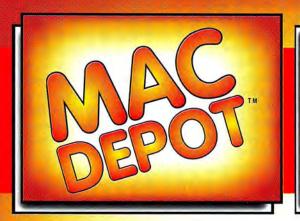






UK 080 089 1742 • Singapore 65 287 5181 • Australia 0014 800 125353 • Thailand 622 234 7531 • Canada 800-624-9307 • USA 1-800-622-3475 Please circle 139 on reader service card.





#### **USE OUR TOLL-FREE** INTERNATIONAL **PHONE LINES**

Australia 0014-800-125-712 ; Canada 1-800-548-2512; Denmark 0434-0297; France 19-0590-1099; Italy 1678-74086; Japan 0031-11-1351; Netherlands 06-022-8613; Norway 050-12029; Switzerland 046-05-3420; United Kingdom 0800-89-1178. **Best International freight** service and low, low rates via:



#### **WE CARRY OVER** 1.600 PRODUCTS

PLEASE CALL FOR UNLISTED ITEMS.

- 1. THE LOWEST PRICES
- 2. THE BEST SERVICE
- 3. INTERNATIONAL TOLL-FREE ORDERING
- 4. VERY LOW INTERNATIONAL FREIGHT COSTS VIA DHL

#### ACCESSORIES

45 BE	MOVABLE	HD CAR	П			7	9.00
BERNO	IULLI 448	MB TRIP	IK			23	0.00
DESKJ	ET BLK C	ARTRIDE	¥			1	5.00
DUST	COVERS .						CALL
				3			
	A	D	-	141	A	D	
н	A	R	D	W	A	R	E
3.0							5
CLEAR	VUE/II SY	STEM				97	9.00
CLEAR	VUE/II SY VUE/SE .	STEM				97 119	9.00
CLEAR CLEAR CLEAR	VUE/II SY VUE/SE . VUE/GSII	STEM				97 118 143	9.00 9.00 9.00
CLEAR CLEAR CLEAR CLEAR	VUE/II SY VUE/SE . VUE/GSII VUE/GS3	STEM				97 119 143	9.00 9.00 9.00 9.00
CLEAR CLEAR CLEAR CLEAR	VUE/II SY VUE/SE . VUE/GSII VUE/GS3 VUE/XL .	STEM				97 118 143 143	9.00 9.00 9.00 9.00
CLEAR CLEAR CLEAR CLEAR CLEAR CMS 2	VUE/II SY VUE/SE . VUE/GSII VUE/SE3 VUE/XL . ZOMB EX	STEM	DRIVE			97 118 143 143 148	9.00 9.00 9.00 9.00 9.00
CLEAR CLEAR CLEAR CLEAR CLEAR CMS 2 CMS 3	VUE/II SY VUE/GSII VUE/GSII VUE/GSI VUE/XL POMB EX	O	DRIVE			97 119 143 143 148 32	9.00 9.00 9.00 9.00 9.00 9.00
CLEAR CLEAR CLEAR CLEAR CLEAR CMS 2 CMS 3	VUE/IS SY VUE/GSI VUE/GSI VUE/XL . POMB EX SOMB EX	T. HARD	DRIVE			97 118 143 148 148 32 57	9.00 9.00 9.00 9.00 9.00 9.00 5.00
CLEAR CLEAR CLEAR CLEAR CLEAR CMS 2 CMS 4 CMS 4	VUE/IS SY VUE/SS VUE/GS3 VUE/KL POMB EX BOMB EX BOMB EX BOMB EX BOMB EX	T. HARD	ORIVE			97 	9.00 9.00 9.00 9.00 9.00 5.00 5.00
CLEAR CLEAR CLEAR CLEAR CLEAR CMS 2 CMS 4 CMS 4 CMS 4	VUE/IS SY VUE/SE VUE/SE VUE/GSI VUE/GSI VUE/GL ZOMB EX ZOMB EX ZOM	T. HARD	ORIVE			97 	9.00 9.00 9.00 9.00 9.00 9.00 5.00 5.00

COLORBOARD 24STV

COLORDARD 81
DAYSTAR SAMIZ '030 IICK, WICO-proc.
DAYSTAR 30MIZ '030 IICL
DAYSTAR 40MIZ '030 IICL
DAYSTAR 40MIZ '030 IICL
DAYSTAR 50MIZ '030 IICK, WICO-proc.
OICONX JET PEINTER

DOVEFAX 24/86 EXTERNAL E-MACH. Z21 IQ/MACH ..... E-MACH.T18,CARD,STAND .

HOWTEK PERSONAL COLOR PRINTER	1999
HP PARVT IFT	999
HP PAINTJETHP PAINTWRITER XL	1999
IKEGAMI 8-BIT SYSTEM	2595
INTERFAX MODEM 24/96	399
LABELWRITER	
LITTLE MOUSE	
MACRECORDER	
MACSYNC MONITOR	
MACTRAC PLUS	
MACTRAC ADB	
MACVISION 3.0	
NEC COLORMATE POSTSCRIPT	5995
NEC SILENTWRITER 2 MODEL 90	1699
NEWGEN TURBO PS300	
NEWGEN TURBO PS360	3399
NEWSEN TURBO PS400	
NEWGEN TURBO PS480	
ORCHID FAX MODEM 24/96	399
PRACTICAL PERIPH. 9600 MODEM	499
OMS COLORSCRIPT 100 MODEL 10	
OMS PS410 TURBO PRINTER	
OMS PS810 TURBO PRINTER	3999
QMS PS810 3MB PRINTER	
QMS PS810 LASER PRINTER	
OMS PS820 LASER PRINTER	
OMS PS820 TURBO PRINTER	
QUICKTEL 2400 BAUD	
QUICKTEL 4800 BAUD SENDFAX	499
OUIME CRYSTAL PRINT EXPRESS	3499
OUME CRYSTAL PRINT - PUBLISHER II	
SCANMAN	
SIGMA L-VIEW MULTIMODE	1410
SIGMA PAGEVIEW 15", SE/30	
SIGMA SILVERVIEW 21" MONO	1499
SIGMA SILVERVIEW GREYSCALE, MAC II	1789
SONY 1302	
SONY 1304	
TEXTRONIX COLORQUICK PRINTER	1850
TOSHIBA CO ROM	
TYPIST	

#### GRAPHICS

CANVAS V2.11	79.00
DESIGN CAD 20/30	
FREEHAND 2.0	25.00
MACROMIND DIRECTOR	20.00
OAWIDRAFT	65.00
OMNIPAGE V2.0 5	10.00
OMMPROOF	
OMNISPELL	65.00
PAGEMAKER 4.04	99.00
PIXEL PAINT PROF	75.00
SUPERPAINT V2.0 1	25.00
PRODUCTIVITY	8

UTIL	ITIE	
4TH DIMENSION	4	0.691
AT ONCE		275.0
EXCEL V 2.2		249.0
FOXBASE+ MAC SINGLE		285.0
PERSUASION		325.0
POWERPOINT V 2.01		239.0
QUICKEN		
REFLEX PLUS		185.0
SUPERCARD		85.0
TIMESLIPS III		59.0
WORD 4.0		
FREEDOM OF PRESS		245.0
MACLINK PLUS		10.0
MACPRINT		90.0
PYR0 V 4.0		25.0
QUICK KEYS 2		95.0
S.A.M		85.0
SOFTPC AT/EGA OPTION		125.0
SOFTPC V1.3		230.0
SUITCASE II V1.2		43.0
SUM (SYM UTIL, MAC)		99.0
SUPERLASER SPOOL V2.02		
SUPERSPOOL V5.0		55.0
THINK'S C 4.0		154.0
TOPS		189.0
ULTRASCRIPT MAC		112.0
VIDEY		

#### MACUSER EDITOR'S CHOICE AWARDS

PRODUCTS OF THE YEAR				
1. Global Village Teleport		8. Photoshop		
A300 Modem	. 135.00	9. Colorboard 364899.00		
2. Typestyler	. 110.00	10. Think Pascal 159.00		
3. Color Studio	. 599.00	11. Norton Utilities85.00		
4. Studio 32	. 399.00	12. Voice Navigator 589.00		
5. More 3.0	. 250.00	13. QMS P8410 1999.00		
6. Minicatl+ 3.0	. 525.00	14. Sigma L-View Multimode . 1410.00		
7. FilmMaker	. 440.00	15. Cosmic Osmo CD-Rom 55.00		



National Semiconductor<sup>TM</sup>

Video Card 19" Trinitron display with 24-bit color card, hardware Zoom and Pan, cable and tilt/swivel stand. Multiple

#### MegaGraphics

Unequalled price and performance make these monitors the first choice of knowledgeable buyers. THIS 19" PROFESSIONAL DISPLAY OFFERS:

• VIDEO BOARD • TILT/SWIVEL STAI

Mac SE, SE/30, II, IIx, Grayscale for Mac II series ........ \$1799 Gravscale for Mac SE/30 . \$1965



ile. It's

I. Also built into hardware wi real-time 3-to 1 and 6-to-1 hardware compression to minimize the size of sound files. Call for pricing



300 DOTS PER INCH RESOLUTION.

SUPPORTS APPLETALK AND SERIAL.

NOW ONLY \$699

GET A PAINTWRITER XL AT A GREAT PRICE!



#### **Mac CPUs**

Mac IIsi 2/40 ......2699.00 Mac IIsi 5/80 ......3299.00 Mac IIci 4/0 ......4150.00 Mac IIci 4/80 ......4599.00 Mac IIfx 4/0 ......6150.00 Mac IIfx 4/80 ......6799.00

Call for other models and configurations.

ı,	
I	MICROTECH 40MB EXT HD CALL
ı	MICROTECH CD ROM PLYR CALL
I	MICROTECH SOMB REMOV CALL
ı	MICROTECH 80MB EXT HD CALL
ı	MICROTECH 100M EXT HD CALL
ı	MICROTECH 120M EXT HD CALL
ı	MICROTECH 200M EXT HD CALL
ı	MICROTECH 320M EXT HD CALL
ı	MICROTECH 400M EXT HD CALL
ı	MICROTECH 650M EXT HD CALL

#### **30-DAY MONEY BACK GUARANTEE**

If you're not happy with a piece of software purchased from Mac Depot, just call us for a return authorization and return it with all of the original packaging and we'll give you a full refund!

#### OUR POLICIES











Canada Toll-Free: 1-800-548-2512



- Super fast 14ms 28ms access time.
- No less than 30,000 hours MTBF.
- Compatible with MacII, IIcx, IIci, SE, SE/30, Plus & fx.
- Your choice of brand name hard drives.

#### HARD CORE

- Whisper-quiet fan.
- 24 hour burn-in testing.
- 50-pin connectors to daisy-chain.
- Power surge protection.
  - Steel case for low heat & support.

#### You might say our drives are

#### HARD TO BEAT

- Designed & engineered by experts at Hard Drives International.
- Hundreds of thousands of customers.
- Lifetime Toll-free technical support.
- Step-by-step Manual.
- 30-day "Worry-Free" Guarantee.
- 1 & 2 Year Replacement Policies.

#### HARD TO BELIEVE

We buy quality components in huge volume & pass the savings to you!

It's easy to see why HARD TO RESIST



### **POWER**Drive

Mbytes	Mechanism	Acces	s Int.	Ext.
20	Seagate	28ms	\$249	\$295
30	Seagate	28	269	319
40	Quantum*	19	259	319
45	Seagate	28	299	359
60	Seagate	28	NA	389
80	Seagate	28	NA	439
80	Quantum*	19	379	439
105	Quantum*	19	349	399
105	Toshiba	20	479	549
200	Maxtor	15	929	799
210	Quantum*	16	769	799
320(нн)	Micropolis	14	NA	1399
320(FH)	Imprimis	16	NA	1449
600(FH)	Imprimis	16	NA	1799
660(FH)	Micropolis	16	NA	1899
1050(FH)	Imprimis	16	NA	2699
1050(FH)	Micropolis	14	NA	2699
Removable SyQuest \$			\$499	

25ms. Includes 45Mb cartridge. Extra Cartridge \$79.

#### CD/ROM

\$599 External optical storage unit. 350ms access time. Uses Toshiba or Chinon mechanism - your choice.

#### **Memory Upgrades**

1Mb\* (1x8-80ns) 4Mb\* (4x8-80ns)

\$46 \$249

HA0591

For MacII, Ilcx, Ilci, SE, SE/30, Plus, Classic & Ilsi 150Mb Teac Tape Backup (w/tape) \$599

Ext. Incl. "Express Tape" software. Extra Tape \$49

\* 2 Year Replacement Policy

# STOP!

BUYING FROM US IS AS SIMPLE AS ABC!!—AVAILABLE TOLL—FREE TECHNICAL SUPPORT • BUSINESS LEASING • COMPETITIVE PRICING

# re for the BEST PRICES!!

500, Under 15 Pounds On Orders Over

SUPER SAVERS!	
SCANNERS & DIGITIZERS	
Microtek 300ZS	51699
includes Image Studio and Color Studio	
DIGITAL VISION	
COMPUTER EYES COLOR	5320
KOALA TECHNMOLOGY	
MACVISION 3.0 DIGITIZERS	5240
LOGITECH	
SCANMAN	5317
CAERE	
OCR TYPIST Handheld Scanner	5469
ACCESSORIES	
ARTICULATE SYSTEMS	-
VOICE NAVIGATOR II	5695
VOICE LINK	5199 -
DAYSTAR DIGITAL	

MEGAGRAPHICS 5279

POWERCHACHE 030 FOR IICI 40MHZ W/O FPU soon 40MH7 W/FPII 51220 POWERCARD 030 FOR MAC II & IIX \$1645 **MONITORS & VIDEO CARDS** 

FAST CACHE IICI

TONER

**SEIKO MONITORS 14" Trinitron** E-MACHINES T-16 16" Monitor COLOR \$1995 NEC MacSync 14" color monitor . \$459 Rasterops/NEC 24 bit bundle 5950 MAGNAVOX 14" Color \$485 **PRINTERS** APPLE IMAGEWITER II \$450

LASERWRITER PERSONAL NT \$2299 GCC BLP II 51895 GCC BLP IIS \$2699 KODAK KODAK M150 PLUS Portable Printer .

QMS/Apple Compatible, UNCONDITIONAL GUARANTEE! Without Exchange .. WITH Exchange **MODEM & FAXMODEMS** 

LOGICODE QUCIKTEL 4800B SENDFAX and Modem 5120 Dove Modem/Fax Desktop 48/96 5799 Practical Peripherals 9600 Baud 5499 TOP SELLING SOFTWARE

A/P, A/R, G/L, Payroll, Inventory & Project Mgmt \$498 Aldus Pagemaker 4.0 ... Claris Macwrite II 5159 Microsoft Excel 2.2 5745 Mirrosoft Word 5245



TOPS Network MAC Bundle **TOOLS** For Opening Your Mac







569 95

559.95

#### IKEGAMI

MEGA Graphics

with interface for /MacII/SE/SE30

RasterOps MONITORS

24S/24 bit color card for MAC II Family

Color Card 85 For MAC II Family

EMAC 60MB tape backup

**CUTTING EDGE** 

• 44MB REMOVEABLE...5599

and sharpness. Refresh rate: 75Hz;

640 by 870 pixel resolution. Ideal for

desktop publishing. Tilt and swivel stand included.

Cutting Edge Full Page Display

Cutting Edge Two Page Display

EMAC 150MB Tape Backup

CALL for pricing on the complete RasterOps Line!

The Cutting Edge Full Page display offers outstanding clarity

Gray Scale for Mac II-Series

Gray ale for Mac SE/30



19" Trinitron display includes a video card zoom and pan, cables and tilt/swivel stand! AND Generation System

> · E · G Graphics

19" professional

display offers 75 WYSIWYG, with 1024

X 826 pixels and 75Hz refresh rate.

Includes tilt/swivel

\$1049

\$1789

\$1955

5395

Video Cards!

Ikegami 20" CT-20 Trinitron color W/8bit Ikegami 20" CT-20 Trinitron color W/24bit 53550 Ikegomi 20" CN-20 w/8bit 52550

#### MEMORY 1 MB SIMMS-80NS

\$49.00

#### QMS



HOT ITEM! PostScript quality at an affordable price! QMS **PS410** \$1995

Colorscript MOD 10 COLOR PostScript 6795

#### QUME





CrystalPrint Publisher II 6PPM, PostScript, 3MB. Apple or MSDOS compatible CRYSTAPRINT EXPRESS, 12 PAGES/MINUTE, 3MB .. 53695

#### **TEXAS INSTRUMENTS**



PS 35 PostScript, 1.5MB, 6Pages/ Minute WITH AppleTalk Option! 1795 Lowest Price Ever!! PS17-\$1595

#### **HEWLETT PACKARD**



Laser quality at a dot matrix price **DESKWRITER Printer** for Macintosh



#### MACINTOSH COMPATIBLES!



• 68030 Chip • 25Mhz

· 8 bit color card · 2MB RAM

• 1.44MB Floppy Drive • 3 NuBus Slots

Call for BEST Prices!!!



Color 24 bit scanner co handle gray scale, color, lin art and text. WITH ADOBE PHOTOSHOP

Save

) >

0

1

٣

S

3

D

3

B

 $\Omega$ 

P

mter!!

#### ABATON



Scan 300/S 4-bit Gray Scale Scan 300/GS 8-bit Gray Scale MAC INT W/DIGITAL DARKROOM, SCAN DA IBM PC INT W/PC PAINTBRUSH OR PICT. PUB.

#### APPLE MACINTOSH



#### POWER SYSTEM!

Mac IICI-4MB RAM, 170MB Hard Drive, SEIKO 14" Trinitron COLOR Monitor, Extended Keyboard

......<sup>5</sup>5329 Mac IISI-Apple 40MB Hard Drive, 2MB RAM, SEIKO 14"

Trinitron COLOR Monitor, Extended Keyboard ......s3399

Monitor, Std. Keyboard ..... CALL for pricing on the complete Macintosh Line!



MICROTECH INTERNATIONAL

N40 19ms ... 5529 • N80 19ms... 5683 N100 19ms...5749 • N120 14ms...5869 N170 14ms...5999 • N200 14ms...51110

N320 14ms...51370 • N400 16ms...51595 .52245 • N1000 18ms...53094 N650 18ms... REMOVABLE 50 25MS...5889

T 150 25MS...5699 • T1200 DAT...51727 CD 600 CDROM... 699 . OR650 OPTICAL 95MS... 3465

#### SEIKOSHA

ADOBE



Illustrator 3.0

Adobe Typefaces

ImageWriter II Compatible printer Near Letter Quality. • 120 cps (draft) • 30 CPS NLQ . Push tractor and Friction feed for single sheet

\$495

SCALL!

The Cork System 30 is a standalone CPU which requires the Mocintosh ROM chips for operation. It's the first total system upgrade solution for owners of the obsolete Mac 512KE, Plus & SE

# DVANCE BUSINESS CENTER

1801 PACIFIC COAST HWY., STE. A • LOMITA, CA 90717 (213) 325-1422 • FAX (213) 325-4073 (800) 345-1645 • (800) 274-7747

Macromind - Magnavox - Farallon - Epyx - E-Machines - Dove - Deneba - DCA/IRMA

# "We went to the college of

# PixelPaint Pro \$464

SuperMac Now—2nd generation color painting. New version 2.1 uses virtual memory to open and scroll through large and multiple documents. Scan in photos up to 4K x 4K resolution and use 8-bit masking, image merging, and color correction for sophisticated image composition. Pressure sensitive brushes combined with PixelPaper let you simulate brushes and surfaces, including charcoal paper, concrete, linen, and slate. Produce four-color separations using advanced output

#### 

FullWrite Pro 1.5	149.
Caere	
OmniPage	529
OM-MHS Gateway	100
Quickmail (10 Users)	305.
Quickmail (1-5 Users)	215.
Chang Labs	
	279.
CheckMark Software	-
	***
Cash Ledger	114.
MultiLedger 1.3	225.
MultiLedger 1.3 Payroll	169.
Chin Soft	
Turbo Tax	. 49.
Claris FileMaker Pro	215
Filelviaker Pro	215.
MacProject II	
MacWrite II	139.
CompuServe	
Compuserve Navigator	45.
Mac Starter Kit/w Info.Man	
DataViz	
Maclink Plus PC 4.0 W/Cable	118.

#### Publish It! Easy \$139

Timeworks This 1990 *MacUser* Editor's Choice Award winner integrates all the basic tools for desktop publishing into an affordable, easy-to-use program. Includes a 112,000-word spell checker, 240,000-word thesaurus, built-in drawing and painting tools, comprehensive page layout tools, slide-show feature, and 72 templates. Rotate graphics and text, mix typefaces, styles and sizes, print grey-scale or textured type. Precision control features include kerning, leading, stretching, condensing, and automatic text runaround.

Of course, we have hundreds more products than you see here. So

call if you want something that isn't listed.

#### TokaMac LC 040 *\$2998*

Fusion Make your LC twice as fast as a Ilfx. 68040-based accelerator board for your Macintosh LC plugs into the PDS slot without an adaptor. No additional memory or chips required. System 7.0 compatable. Only at Mac's Place.

Maclink Translators

#### **ACCESSORIES**

Advanced Gravis	
Mousestick ADB	64.
Altra	
Felix	99.
American Power	
Conversion	
UPS 110SE	205.
UPS 370 CI	325.
Apple	
Toner/Laserwriter II	105.
C-Enterprises	
AB Box	
ABCD Box (DIN-8)	49.
Casio	
	89.
B.O.S.S. SF-9500	245.
Fellowes -	
Copy Arm (Non-Magnetic)	6.
Fan-File Step Cube	5.
	9.
Fuji Disks	40
High Density 10 Pak HD-Bulk (Units Of 50)	16
Double Sided 10 Pak	
DD-Bulk (Units Of 50)	
Golden Ribbons	
Imagewriter Multi Color	9
ImageWriter Ribbons - Blad	
Goldstein & Blair	

MacLuggage	
Ultimate Neon-Pink, Yellow, or	
Green	84.
Ultimate SE Black Or Navy	79.
<b>Kensington Microware</b>	
Apple Security Kit System	33.
MacII Stand W/Exten.Cables	64.
SE Radiation/Anti-Glare Filter	
Tilt Swivel	
Turbo Mouse Adb	109.
Key tronic	
Mac Pro Plus	139.
Kraft	
Premium III ADB	49.
KM 30 ADB	49.
Macs Place	
7 Outlet Noise/Surge	15.
Mac Tool Kit	14.
Maxell	
150Meg BU Tape CS600XD	22.
60Meg BU Tape CS600HD	18.
MSC Technologies	
ADB Trackball	69.
Little Mouse	74.
Sharp	
Wizard 0Z-8200 128KB	. Call

Targus

Imagewriter Bag Black

Deluxe SE Extended Bag

Black, Navy, Gray, Wine

Mac/SE Bag Black .

Publish-It!

Linda Linda Print For Proportion 2 St.

ADDMotion \$182

Motion Works The first animation and color paint program to be fully integrated within HyperCard 2.0. Add animation, color and sound to any HyperCard stack quickly and easily. Includes intuitive interface, pathbased animation, and built-in color paint with 24-bit color support.

#### TelePort \$128 TelePort/FAX 9600 \$184

Global Village Communication TelePort plugs into a Macintosh just like your mouse. And this 2400 baud MNP5 ADB modem is completely Hayes-compatible. TelePort/FAX 9600 easily sends faxes at 9600 baud from any application.





Ultimate Classic Black or Navy ... 64

Macintosh Bible 3.0

I/O Design

Macintosh Bible W/Disk

68.ea



# How Nora became a Mac widow.

It started off innocently enough. A few minutes with the Mac one night, a few minutes more the next. Then Fred discovered Mac's Place. Once he found out how much the people at Mac's Place know about Macs, he was converted. And the more stuff he got from Mac's Place, the less Nora saw of him. But Nora had a way to get back at Fred. She knew *her* Mac's Place order would arrive in the morning.



# "Fax us your PO\*-My Fax-206-881-3090."-Mac



Freehand 3.0 Call

Aldus The best design and illustration tool for graphics professionals gets even better. New features include on-screen "Colors," "Layers," and "Styles" palettes, flicker-free drawing, faster screen redraw and editing, greater text control, WYSIWIG display of text effects.

#### After Dark 2.0 \$21

- Berkeley Systems Over
- 30 displays plus sound!
- Ticking clocks, thunder, munching worms. Use the
- company logo, messages.
- The best Fish, Flying Toast-

**EDUCATIONAL** 

Davidson & Associates

**Great Wave Software** 

HyperGlot Software

KanjiMaster-Beg. (Japan.) Pronunciation Tutor French, German, Chinese Snanish

Learning Company

Broderbund

Math Blaster .

Number Maze

Span., Fr., Ger. Verbal Tutor Word Torture 4.0 Russ., Span., Fr., Ger., Itl. Knowledge Revolution

Math Rabbit ...

Macintosh

Typing Tutor IV .

Reader Rabbit 2.2

Penton Overseas

VocabuLearn/CE | & || Series | Ea.

Personal Training Systems

Pagemaker 4.0, Illustrator 88 & 3.0,

Filemaker 2.0,. Quark Express & the

Modules for Excel 2.2, Hypercard,

Word 4.0. Persuasion 2.0.

Simon & Schuster

Software Toolworks

Easy Kana (Japan.)

Carina

Voyager

Kidsmath

Kidstime

Calc., Geom., Phys. ..

- ers and MultiModule, Random
- display and password sleep. "Truly
- the Ferrari of screen savers."-

59.ea

RR

27.

138.

34

188

MacWeek.

#### MacPAKS

Baseline ....30 day MBG Thunder 7: Interactive spell checker/thesaurus (1.4 million words) that works with all of your applicationsnot just word processors, \$58. INIT Manager™: Locate, reorder, manage and analyze all your start up documents, \$34. Color MacCheese™ 1.05: First affordable 32-bit color or grayscale paint program, \$57.

After Dark

Mavis Beacon Typing	32.
Visionary Software	9
Lifeguard	49.
Synchronicity V2.5	36.

#### **ENTERTAINMEN**

#### Accolade

Test Drive II The Duel .... Activision Cosmic Osmo 39 Baseline Publishing

#### Talking Moose Broderbund

- Ancient Art Of War Ancient Art Of War At Sea .. 28 Playmaker Football 30 SimFarth 39 29
- SimCity Supreme The Playroom

#### Mac's Policies

- VISA, MASTERCARD, AMERICAN EXPRESS, and OPTIMA gladly accepted.
- Your credit card is never charged until your products ship.
- When a partial order is shipped, no additional freight is charged for shipments that complete the order (U.S. only).

  \*Most items carry the manufacturer's 30 or 60 day Money Back Guarantee (MBG). Mac'sPlace has a 30 day MBG on all hardware (USA). only). Ask for details when ordering.

  120 day limited warranty on all products, some hardware items carry
- one and two year warranties. Defective software is replaced immediately with like item(s). Defective hardware items repaired or replaced at our descretion. Loan drives subject to availability (USA only)
- Most personal and company checks approved upon receipt to insure immediate shipment.
- Allow approximately one week for checks over \$1,000.

  Government, School, and Institutional P.O.'s clear immediately (\*some corporate accounts require credit approval, please call). All PO Customers pay full shipping charges on each shipment.

  No sales tax (except WA residents add 8.2% to total, including
- shipping).
- All returns must have an authorization number. Please call 800-367-4222.

Please call 800-301-4222.

All prices & promotions subject to change without notice. All items subject to availability. Not responsible for typographic errors.

Orders USA: Orders placed weekdays by 7:30 pm E.S.T., 4:30 pm P.S.T. for "in stock" items ship same day (barring system failure, etc.) for overnight delivery via Airborne Express. Our \$3.00 shipping charge includes insurance at no extra charge. Rural locations may require an additional day for delivery. Areas not serviced by Airborne will be sent via U.S. Postal Service or UPS Second Day. Alaska & Hawaii orders ship UPS 2nd day air. Alaska customers outside metropolitan

areas pay full shipping charges, ask for rates.

International Orders: Call 206-883-8312. We ship throughout the free world. Contact Mac'sPlace for information. Mail, FAX or electronic orders gladly accepted.

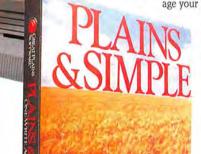
orders gladly accepted.
Electronic Mail Orders: Compuserve (76635,660); GEnie (PLACE);
America Online (MacsPlace). Mac'sPlace uses CE Software's
QuickMail™ to check our mail each hour.
Phone: 800-367-4222, 206-883-8312, FAX 206-881-3090
Mail: 8461 154th Ave NE, Redmond, WA 98052

© 1991 Mac'sPlace, Inc.

#### Plains and Simple \$255

Great Plains At last-accounting software powerful enough to help you manage your business with confi-

dence, simple enough so you don't have to be a computer expertor an accountant-to use it.





Inline Design New color puzzle game. Eliminate tiles from a "board" according to color and texture. When only one tile is left, a different, more difficult arrangement appears. Start by removing as many tiles as you can, move up to improving your score by using the fewest possible moves. Nerve-wracking!



#### lacintosh knowledge." —Mac NISUS Nisus 3.05 *\$235* DeltaPoint 109 Double Helix Release 3 III . DeltaGraph 1.5 Paragon Concepts Power features include un-0 Taste .84. **Paragon Concepts** Farallon limited undos, noncontiguous selection, inte-Nisus 3.05 Timbuktu 3.1 (30 Pk) 1279 **Portfolio Systems** grated thesaurus, foreign language dictionaries. ş Timbuktu 3.1 One User Dynodex Instant Address Book ... Power Search, and Power Search+ to streamline Timbuktu Remote 2.0 DynoPage 1.0 all writing jobs. Even simplifies complex tasks like U Fox Software Prescience reformatting FoxBASE+/Mac 289 Expressionist 2.07. FoxBASE+/Mac MultiUser ... \$ Quark Franklin Software Practica Musica **XPress** 49. Language Master . Reality Technology Freesoft 2.2 \$66 Wealth Builder 145. White Knight V11 .83 Reference Software Ars Nova One of **Great Plains Software** Grammatik Mac v.2 ... MacUser's "Best 200 Mac Plains & Simple ... Sensible Software Products of 1989." In-Sensible Grammar ... Smartcom II cludes sampled sound, Shana Corporation Informix textbook, and wide range Informed Auto Form ...... PRACTICA Wingz Informed Designer .. of activities-scales, inter-Insight Development Informed Mini Manager 54 vals, chords, melody, and 94 Macprint 1.2 Softsync rhythm). Fun to use and Insignia Solutions Accountant Inc fully MIDI-compatible (but 81 Access PC Softview not required), this award-Soft PC Macintax Federal 1990 SoftPC-AT/EGA Module ..... winning program will be Software Ventures International Business enjoyed by both beginers Microphone II v3.0 Call Software Solutions Inc. & advanced students. 198 Data Club 3 User Faxgate Plus 235 Data Club 10 User ... 538 Survivor Software Intuit 58. MacMoney 3.5 Quicken 1.5 38 Symantec Spaceward Ho Kiwi Software Inc. More 3.0 269. KiwiEnvelopes! 32 Symmetry Lexpertise U.S.A. Inc. Key Plan MacProof **Systems Compatibility** MacShack Enterprises Software Bridge MyTimeManager 3.0 ... T/Maker Microsoft WriteNow 2.2 Excel 22 239 Teleware Office . 525. ategic Strategic Conquest 3.0/ M.Y.O.B. 143 PowerPoint .. 242 onquest Word 4.0. Spaceward Ho! \$35ea. Nolo Press Multi-Player Strategy Game for Macintosi Will Maker 4.0 Delta Tao Software The 2 best strategy games ever. Explore and conquer Accountant Inc \$342 the world of Strategic Conquest or the Softsync/Bloc Integrated small galaxy of Spaceward Ho! against the combusiness accounting system, inclds puter or human opponents on a Appletalk G/L, A/R, and A/P, Payroll, Invennetwork. From the makers of Color tory, and Project management. MacCheese Streamline entry system inclds. invoices, POs, receipts and payments that auto-post to journals. Also: 100 up-to-date reports, statements, passcountant **Timeslips Corporation** Farallon word protection, import export, TimeSlips III 167 Media Tracks Multimedia Pack CD help screens and more. Tops/Sitka FM Waves Tops 3.0 Network Bundle Traveling Software Artware \*Vol. 1-7 CD-ROM ... Lap-Link Mac Connect. Pac HyperGlot Software Westware Learning To Speak French-CD Contact Fase Learning To Speak Spanish-CD ... 62. WordPerfect Corp. **M3** WordPerfect V2.0 ... M3 CD ROM 1990 88. Zedcor Inc Microsoft Desk ... Office CD-ROM **Passport Designs** DeskTop Music Creat. Kit CD Timeslips Accounting Link Pro Music Prod Kit CD . **Everex Systems** Somak for the Mac (TAL) \$52 EMAC Metro CD ROM Drive Clip Art CD Vol. 1 or 2 NEC Wayzata Technology Timeslips Corp Extend the power of Intersect CDR Interface KIT Clip Art Masterpieces .. CDR-36 CD Rom Drive Port. Timeslips III with or without general ledger ac-124. Down To Farth CDR-72 CD Rom Drive . counting software. Provides customized income Quick Art Digidesign repots and links billing and payment data from Timeslips III to many general ledger or accounting programs.

"Network with us."—Mac

"We're the only Mac mail order place th



**NEC Intersect** CDR -36 CD-ROM \$558

NEC The CDR-36 is NEC's latest version of its award-winning portable design. With data access times of 500 milliseconds, the CDR-36 gives you excellent performance at a cost that's considerably lower than comparable drives. NEC also offers a family of top quality clip art, stock photography, and Adobe type on CD-ROM. W/Interface

> CE Software The intelligent desktop. Unlike the Finder, Tiles remembers what you do. It gives you instant access

to applications, documents, and QuicKeys 2 macros that you use all the time. Includes demo version of QuicKeys 2.

Tetris	24
Welltris	24
Strategic Simulat AD&D: Curse of the Azu	ions, Inc.
AD&D: Pool Of Radiance	
Strategic Studies	
American Civil War Vol	
Gold of the Americas	3Call
Halls Of Montezuma	
Panzer Battles	28.
Reach for the Stars	30.
Rommel Battles for Nor	
Three Sixty	
Armor Alley	34
Harpoon	39
Harpoon Battle Set #2 .	
Sands Of Fire	
Toyogo, Inc.	
Go Junior	21
Nemesis Go Master	47
Go Master Deluxe	95
XOR Corporation	
MacGolf Classic	40
MacSki	
NFL Challenge TaskMaker	
I GOVINIGUE! ************************************	ZD.

#### **GRAPHICS**

3G Graphics	
Images W/Impact	
Accents	. 63.
Business 1	. 63.
Graphics & Symbol	. 49.
Adobe	
ATM Plus Pack	107.
Collector's Edition II	128.
Illustrator 3.0 w/ATM 2.0	338.
Photoshop	489.
Smart Art 1-4 5 Streamline 2.0 Type Align	8ea.
Streamline 2.0	128.
Type Align	. 57.
Type Manager	. 55.
Type Reunion	.37.
Type Set 1 or 2	.57.
Type Set 3	114.
Adobe Postscript Fonts	
Call for Full Line Of Adobe PS For	nts
Type On Call	. 49.
Aldus	
Frachand 2.0	Call

Freehand 3.0 489 Pagemaker 4.0 Persuasion 2.0 Altsys Art Importer 2.0 88

Fontographer 3.2 Metamorphosis 1 **Baseline Publishing** Color MacCheese

Broderbund Banner Mania . TypeStyler 1.5

57

64

598

287

125.

**CE Software** Amazing Paint Claris Claris CAD

MacDraw II

MacPaint 2.0 Deneba Software Ultrapaint Canvas 3.0

**Dubl-Click Software** 

White Knight 11.0 \$83

Freesoft Scott Watson's successor to the legendary Red Ryder telecommunications program. More than just a new version..the added features are more than 20 pages long.

270+ page manual designed as a tutorials and step by-steps for beginers and plenty of "meat" for experienced users. Includes Okyto, a revolutionary Mac-to-Mac file transfer program and a free subscription to GEnie network.

Carmen San Diego (Europe)?	29
Carmen San Diego (U.S.A)?	
Carmen San Diego (World)?	
Carmen San Diego (Time)?	29
Casady & Greene	
Crystal Quest 2.2	27
Mission Starlight	
Sky Shadow	29.
Centron	
Casino Master B & W	35.
Casino Master Deluxe Color	
Delta Tao Software	
Spaceward Ho!	35
Strategic Conquest 3.0	
Electronic Arts	

Entertainment On-Liv	10
Starflight	
Might & Magic II	
Weaver Baseball	
Chuck Yeager's (A.F.T.)	
Chessmaster 2100	
Bard'S Tale	

LUTTERY TIBUKET OF VYHEETER
Inline Design
Bomber (w/Headphones)
Darwin's Dilemma
Tesserae
Lucasfilm

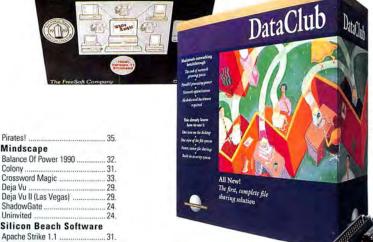
Indiana Jones/Last Crusade Pipe Dream Mediagenic Shanghai

Micro League Sports Micro League Baseball II Microprose

Colony .. Crossword Magic Deja Vu Deja Vu II (Las Vegas) ShadowGate ... Uninvited ..... Silicon Beach Software Apache Strike 1.1 Beyond Dark Castle 31. Software Heaven Software Toolworks Cribbage King/Gin King 26. Hunt For Red October Life And Death 32 Spectrum Holobyte Falcon 2.2 PT-109 26

Solitaire Royale

Pirates!



#### Data Club

IBS Amazing new concept in file server software. Provides parallel processing performance, centralizing server access, and practically unlimited storage-yet requires no dedicated hardware. LAN Magazine Software of the Year. 3-user \$198, 10-user \$538.

#### DataLink LC \$249

Applied Engineering Take full advantage of the single slot in your Macintosh LC. This multi-function internal card includes a 2400/9600 data/send-fax modem with optional v.42 bis, an extra serial port, a

math coprocessor socket and a future upgrade to receive faxes.

International order



ses the same computers you do."—Mac Vol 1-9 WetPaint Vol 1 & 2 Classic Clip Art Vol 11 & 12 Industrial Rev. Vol 13 & 14 Old Earth Alm Vol 15 & 16 Island Life Vol 17 & 18 All The People 39 Vol 3 & 4 For Publishing .. 39. Vol 5 & 6 Animal Kingdom Vol 7 & 8 Spc. Occasions 39 Vol 9 & 10 Printer's Helper 39. World Class Fonts Four 2 Vol. Sets Ea 39 Dynaware DynaPerspective 632 Eastgate Systems 35 **Electronic Arts** Studio/32 448 Studio/8 V2.0 189 FM Waves Artware Vol.s 1-7 Call MacroMind MacroMind Director MediaLab Tech 224. **PictureLink** Paracomp 438 FilmMaker. Model Shop 375 Swivel 3D Professional 435 SwivelArt 81 Silicon Beach Software Personal Press Super 3D 2.0 (Color) 328 SuperPaint 2 0 131 Solutions Inc. Curator **Tactic Software** Icon-It! **TimeWorks** Publish It! Easy 2.0

LC w/V.42 bis & Send FAX DataLink/Mac (Internal 2400) ... 205

#### Asante

Call for New Low Prices! EitherNet Thin Thick. & Twisted Pair

Asuka Technologies NuScan Color (Nubus) 438 NuScan Color (SCSI) 535 NuScan Grayscale (Nubus) NuScan Grayscale (SCSI) 398

#### Caere **Typist** Datadesk

Mac 101 Keyboard Switchboard 169 Dayna Communications EtherPrint-T

479

819

1579.

#### **Daystar Digital**

Fast Cache Ilci 64K 278. PowerCache Ilci 50MHz PowerCache Ilci 50MHz w/68882 co-processor Call Dove

#### DoveFax Desktop

269 MaraThon MaraThon 030 Plus w/Virtual ... 524

#### Everex

Emac 60T (Tape Backup) EMAC 150MB Tape Backup MD2400 Baud Modem MNP-5 . 169 EMAC DAT 1.3 Gig Tape ......

PhoneNET PhoneNET Connectors Star Controller

#### StarController-FN **Fusion Data Systems**

CI 040 Accelerator 2998 LC 040 Accelerator 2998

#### Type On Call \$49

Adobe Now you can access the entire Adobe Type Library-over 800 fonts-delivered on a single CD ROM. Select the fonts you want, then give us a call when you want to order more and we'll give you the code to unlock them.

#### Zoom/Modem V.42 bis *\$185*

Zoom Telephonics Get supercharged data transfer for effective speeds up to 9600 bps, plus full V.42 bis and MNP 5 compatibility. Automatically adjusts speed and error-checking to communicate with any 2400, 1200, or 300 bps modem. 4 1/2 mouse rating from MacUser.



File Guard 2.5 \$134 Planisoft Protect your hard disks, applications, files/folders (including System) from unauthorized access, deletion, and/or audit trail capability. Also available in office packs, 5 & 10 users. 5 Mice from Mac User

SI 040 Accelerator

#### Deskpaint/Deskdraw 3 HARDWARE

#### Abaton

Zedcor Inc

Interfax 24/96 Fax/Modem Scanner 300/Color PhotoShop for 300/Color 394 Scanner 300/GS 8 Bit .. Applied Engineering 219 Mac Drive (FDHD compat) Datal ink

#### M3 CD ROM 2-Disk Set \$88

Over 1.1 Gigabytes of carefully selected Macintosh Public Domain and Shareware files. Over 100 LW fonts, 1,000 IW fonts, 300 games, 350 Inits, 400 DA's,

10's of megabytes of utilities, sounds and much more, make this the

most complete set of software available anywhere. A must have for any CD drive owner! Only at Mac's Place

# **EMAC Metro**

listen to your favorite CD tunes. Zero-footprint chassis fits under Plus, SE, and SE/30. Includes built-in speaker and headphone jacks, and comes with CD ROM sampler disk with text, audio, and graphics files.

Global Village Comm.	
TelePort A300 (2400 bps)	128
TelePort/Fax 9600	Ca
TelePort/Plus 1 w/Send FAX	184
lomega	
Bernoulli Dual Drive	2095
Bernoulli Portable	. 1398
Bernoulli Transportable	998
Bernoulli Tri-Pack Gold	285
Micron	
XCEED Ilci-128K (Cache Card)	259
Micron Video Cards	
00'-1411 40114	ere

8Bit MacII - 13"/14" Mon - 13"/14" Mon 8Bit SE/30 NAC Hyper-Net Din 8 19 Orange Micro Grappler 9 Pin (C/Mac/Gs) Grappler Mac LX Mac286 Nubus Card ...... 128

RasterOps

Mac II ColorBoards
Video ColorBoard 364 364 VideoBoard/Audiomedia 364P Video ColorBoard (PAL) Mac II Display Systems 24L Calibrator 19" System SE & SE/30 Display Systems

264 SE/30 (24 Bit) Shiva Corporation

Ethergate NetBridge

CD ROM Drive \$598 Everex Access all industry-standard CD ROM CDs-and even

Dui! ¡Si! Ja! Da!."—Mac





SIMMS Call

Expand the mind of your Mac! One megabyte SIMMS at incredible prices! 80 nanoseconds or faster. Includes the most complete installation manual available. SIMMs for all Macs including IIfx, ci, si, LC and Classic. Get your Mac ready for System 7call today for pricing!

Call
59.
98.
28.
29.
98.
89.
45.
58.
68.
168.
100.
<mark>7</mark> 4.
89.
65.
58.
65.
)

#### PROGRAMMING

# Addison Wesley

Guide to Mac Family Hard	21.
Mac C Prog Primer Vol 1	19.
Mac C Prog Primer Vol 2	19.
Mac Pascal Prog Primer Vol 1	19.
Macintosh Program Secrets	18.

Programmers Online Companion	32.
nside Macintosh Series	
/ol.1	
Vol.2	
/ol.3	17.
Vol.4 Vol.5	19.
Vol.5	19.
K-Ref	9.
Macintosh Inside Out Series	
lements of C++ Macintosh	
Programming	
C++ Programming with MacApp	19.
Complete Book of HyperTalk 2 Mac Prog Guide to MPW Vol 1	19.
Mac Prog Guide to MPW Vol 1	19.
ResEdit Ref (w/ResEdit 2.1)	
Bowers Development Co	rp.
AppMaker 1.1	214.
Digitalk	
Smalltalk/Vmac V1.1	124.
Microsoft	
QuickBASIC 1.0	64.
Microsoft Press	
nside SuperCard 1.5	18.
Silicon Beach Software	
Super Card 1.5	195
Somak	
Script Edit 2.0	60
	. 33.
Symantec	
Just Enough Pascal	54.
Think C 4.0	104.
Lightspeed Pascal 3.0	159.
GS Systems	

#### UTILITIES

Advanced Software	
Intouch	39
Aladdin Systems	
Stuffit Deluxe 2.0	59

#### AppMaker \$214

Bowers Development Version 1.2-New! Generates code for the Macintosh user interface, including menus, windows, dialogs, and alerts. Supports object-oriented and procedural programming languages, including C, PASCAL (MPW and THINK), TCL, A/UX, and MacApp. Customize for your own programming conventions or to add languages.

Netmodem V2400	428.
Netserial	274.
Telebridge	404.
MMIZ	

#### Sigma Designs

L-VIEW IVIUITI-IVIUUE
Mac II 19" B&W 122
Mac II Video Card39
PageView
B&W 15" Portrait Monitor 74
Sophisticated Circuits
Power Key Modem Wake-Un Cable

#### PowerKey Supra Corp.

5	Supra Modem	
4	2400 Baud	109.
- 7	2400 MacPac	169.
1	2400 MacPac w/MNP 5	198.
3	2400 Plus	182.
7	2400 Baud w/MNP 5	158.
1	elebit	
Т	T-2500 V.32 W/PEP 19k 1	049.
ď	Frailblazer + 18k	869.

#### Thunderware

Lightning Scan 400	3
ThunderScan 5.0	1
Total Systems Inc.	
Gemini 68030 Accelerators	
SE 25MHz	9

#### Makes Gemini Accell fit Mac+/512K Gemkit (110 VOLT)

SE 40MHz SE 50MHz

Wacom	
Digitizers w/ Cordless Stylus	
12 X 12 Electro Static w/ Stylus	952
12 X 12 Standard w/ Stylus	. 866
12 V 12 Townlete Many David	and

#### 6 X 9 Standard/Firm Pressure ... 628

Zoom Telephonics	200
Zoom Modem	11.4
2400 V.42bis External	18
2400/9600 Send Fax	12

#### Macintosh Membership Kit \$22

CompuServe's new Information Manager software lets you use CompuServe with windows, pull-down menus. dialog boxes, and easy commands. Better than ever, CompuServe now links you with over 750,000 interactive users!

#### WealthBuilder \$145.

Reality Technology Designed for the individual investor and perfect no matter what your level of expertise. Gives you objective information on up to 1200 mutual funds and 10,000 stocks and bonds. Earn more by investing wisely and saving more effectively!

#### MUSIC

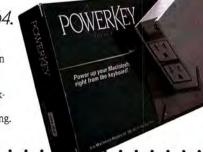
120

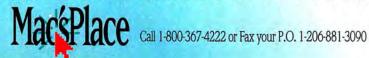
#### Practica Musica 2 Digidesign Audiomedia Call MacProteus **Electronic Arts** Deluxe Music Con Set 2.5

Power Key w/Quick Keys Lite \$64.

Compuserve

Sophisticated Circuits Turns on your Mac and peripherals from the keyboard and shuts everything down from the Special menu. Can be programmed with an on/off schedule. Great for communications and backups. Four outlets provide surge and overload protection and noise filtering. SE and II compatible.





# ve have to know Macs."—Mac

#### HARD DRIVES

At Mac's Place, we've come up with a sure-fire way to make sure you get exactly, precisely the hard drive that's

Instead of ordering a pre-packaged drive, we let you specify the components you want. Then we put it all to-

This way you can get an internal or external drive with the capacity and mechanism you want. You can even specify the kind and color of case you want for your exter-

We assemble, format, and test the whole thing and ship it to you overnight. \*\* And guarantee it for one or two years.

So create your drive using the components listed. And, as always, if you have even the slightest little question, give us

CRU
Case Oper
Internal M
Mounting

Case Opener/Torx Kit	9.
Internal Mounting Kits	
Mounting Bracket (Ilcx/Ilci)	15.
Hard Drive Case	
Data Port Removable Case	168.
Half Height Case Platinum	116.
Syquest Case Platinum	105.
Maxtor	
Half Height Drive	

200-Meg 15ms Maxtor 5.25"

Full Height Drive 615-Meg 16ms 2year Warranty1898 675-Meg 16ms 2year Warranty2295.

Micropolis 5.25"	
Full Height Drive	
Micropolis 675MEG	1889.
Half Height Drive	
Micropolis 330MEG	1498.
Quantum 3.5" Drive	
Half Height Drive	
40-MEG 19ms	319.
80-MEG 19ms	498.
105-MEG 19ms	579.
120-MEG 15ms	629.
170-MEG 15ms	789.
210-MEG 15ms	989.
Syquest	
44 MEG Cartridges	74.

44 MEG Mechanism .....

Removeable Hard



Alsoft	
Diskexpress II/Multidisk BNDL	E2
	52.
ASD Software Inc.	
FileGuard 2.5	. 134.
FileGuard 2.5 (10-User)	. 575.
FileGuard 2.5 (5-User)	.347.
Baseline Publishing	
INIT Manager	34.
Thunder 7	
Berkeley System	
After Dark 2.0	21
CE Software	
Alarming Events	84.
Calendarmaker 3.0	
Disktop 4.0 + Gofer & Util	

QuicKeys 2.0	89.
Tiles	
Central Point Softw	vare
Mac Tools Deluxe	79.
Connectix	
Virtual- 68030 Macs	110.
Dantz Development	
Retrospect	145.
Retrospect Remote	160.
<b>Dubl-Click Softwar</b>	e
Calculator Con Set 2.0	44.
ClickChange	39.
Farallon	
LIAISON V3.0	265.

#### SCSI Director Professional \$95

DJK Development Reformat your hard drive with this powerful new SCSI utility, optimized to exploit the full potential of your complete system, including cartridge, optical and Floptical<sup>TM</sup>. Features 99 partitions, A/UX, diagnostic and benchmarking test, device control, passwording, read-only, and manual mount. Only at Mac's Place.

#### Enterprise 030LC Call

Total Systems This inexpensive 68030 accelerator card for the Macintosh LC includes a math co-processor. Or get Enterprise with just the math co-processor now, and add the 68030 processor later. 20, 25, 33, or 40MHz processor speeds, userupgradeable to different speeds, easy to install into direct processor slot, complies with all Apple Minimina Maria heat and power specs.

Mac Pro Plus \$139

Keytronic New enhanced 105key layout compatible with any Mac (cables included) Includes productivity features such as Period/Comma lock capability & interchangeable Caps Lock and Ctrl keys. Limited life-time warrantee. Free offer for Tempo II™.

# Soft PC for the Classic & LC \$138

Insignia Solutions PC Software emulator so good it can run the toughest of MS-DOS applications and custom developed programs. Complete 80286 PC capatibility for the Classic, LC, SE, Plus, and Portable at an affordable price. Runs more applications than Windows!



Paragon Concepts	
MacOWERTY	29.
Psybron Systems	
CalenDAr	29.
Sabastian Software	
Image Grabber 2.0	33
Salient	
Disk Doubler	45
Software Innovations	
HandOff II	49
SuperMac Software	
Disk Fit 2.0	58
Symantec	00.
Norton Utilities for the Mac	82
S.A.M.	
S.U.M. II	
Vertical Solutions	
FastCat	51
Tagrage annual management	

vith every order."-Mac





# -800-972-3018

610 South Frazier Conroe, Texas 77301 Call: 409-760-2400 FAX: 409-539-4141

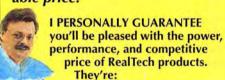






#### PREMIUM BRAND-NAME PRODUCTS AND A NEW, AFFORDABLE OPTION: **REALTECH™**

"I only sell names you can trust: RasterOps, Ikegami, Microtek, Texas Instruments, Seiko, Sharp, and others. And now there's RealTech<sup>TM</sup> (my "house brand") ...premium quality at an affordable price.



- 40-60% LESS than the comparable Apple product. (Designed to Apple specifications, and compatible with all Apple equipment.)
- Backed by a ONE-YEAR WARRANTY with an optional two-year add-on.
- Backed by my personal guarantee and return shipping policy: Try your Real-Tech product for 30 days. If you're not absolutely satisfied, give me a call. I'll gladly refund the purchase price...and I'll even pay the return shipping costs."

Real Provenches

RealTech Full Page Display At this price, you can't afford not to have one of these incredible eyesavers! Quality, flicker-free images at a price that lets you experience the convenience of large-screen viewing.

- 15" portrait display
- 870 x 640 resolution, 80 dpi
- · Vertical refresh rate of 74 Hz
- · Full gray scale capability
- · Flat CRT, P4 phosphorus, polished screen
- · One-year warranty

CPU	Monitor	Price
Mac II, Ilcx, Ilci, Ilx, Ilfx, SE, SE30	Mono	\$579
Mac II, Ilcx, Ilci, Ilx, Ilfx	GS 256	\$1079
Mac Ilsi, Ilci	GS 16	\$495
Mac Portable	Mono	\$849



RealTech Dual Page 21" Display No more squinting and scrolling! Seeing two pages at once will save you hours of time. The latest in flicker-free monochrome technology provides true WYSIWYG! 21" landscape display with 1152 x 870 resolution, 72 dpi. Vertical refresh rate of 75 Hz, full gray scale capability, and flat CRT (P4 phosphorus, polished screen). One-year warranty.

CPU	Monitor	Price
Mac SE	Mono	\$995
Mac II, Ilcx, Ilci, Ilx, Ilfx, SE30	Mono GS 256	\$995 \$1479
Mac Ilsi	Mono	\$1059
Mac Portable	Mono	\$1249



Powerful, affordable laser printing...from TI's compact microLaser PostScript printers. 300 dpi with HP LaserJet Series II emulation standard. 1.5 Mb RAM upgradable to 4.5 Mb RAM. Optional accessories: 2nd paper tray, separate envelope tray! XL PS 17 Call for price!

> TI microLaser™ XL PS 17 16 pgs./min.; 35 resident fonts; 25,000 pgs./mo. duty cycle



TI microLaser™ PS 17

6 pgs./min.; 17 resident fonts; 3,000 pgs./mo. duty cycle

# Our buying power gives you your buying power!



\$619

Seiko 14" Trinitron

**Amazing color.** High-resolution Trinitron tube makes it possible to view 16 million shades of color!

• 640 x 480 resolution • 14" display, 72 dpi • integrated tilt & swivel base

43% brighter than the leading competitor!



\$1619

RasterOps ClearVue/GS (Grayscale Monitor)

**Unmatched image quality!** Flicker-free images in 256 shades of gray for accurate proofing. Includes Virtual Desktop and Pan/Zoom features for maximum productivity!

- 1024 x 768 resolution 19" display, 72 dpi
- · paper-white phosphor · integrated tilt & swivel base
- 75 Hz vertical refresh rate

Zoom in to check details!

#### Raster()ps

ClearVue (Mac II)	1149
ClearVue SE w/16MHz	
68000 Accelerator	1329
ColorBoard 8S	359
ColorBoard 24S	579
ColorBoard 264 SE030	649
ColorBoard 364	949
SE30 24-bit 14" Trinitron	1269
FrameGrabber (NTSC)	729
14" Trinitron 24-bit	
16" Trinitron 8L	3795
19" Trinitron 8L	3950
19" Trinitron 24L	4990
Pro Video 32	1449

#### MONITOPS w/Carde

MONTONS W/ Caras	
Magnavox 14" w/8-bit	918
NEC Macsync 14" w/8-bit	828
Sony Trinitron 1304 14" w/8-bit 1	

Other monitors available! Please call.



# An incredible price for the latest technology in large-screen color viewing!

**Ikegami 19" Trinitron Color Systems!** 

New generation Trinitron technology...superior to other Trinitrons currently available. Ikegami—the market leader in gray scale monitors—introduces the undisputed champ in color reproduction. Each system comes with an integrated till/swivel stand, and auto and manual degaussing. Full antiglare coating, 75 Hz vertical refresh rate, and flicker-free images reduce eye strain and improve user comfort. Coupled with a high resolution 1024 x 768 video card, this combination is the top-of-the-line color solution available today. **The right solution for every budget!** 

System	Colors	Upgradable to 24-Bit Color	Price
Entry Level	256	No	\$2895
Professional	256	Yes	\$3295
Master's	16 Million	N/A	\$3895

**FREE CONSULTATION to help you answer these 3 questions** and determine the ideal combination of hardware for your exact needs.

- 1. What combination of CPU, HD, monitor & video card best fits your needs?
- 2. How much RAM will be enough?
- 3. 8-bit vs. 24-bit, which is for me?

Turn
Page for
More
GREAT
DEALS!!!



\$1385 Mac Classic, 2.5 Mb RAM, 40 Mb Apple, Apple Keyboard



\$3649 Mac Ilsi B&W Full Page System, 2 Mb Ram, 40 Mb hard Drive, Mac 101 Keyboard, Felix

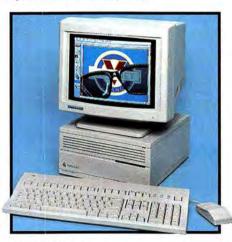


\$6079 Mac Ilci B&W 21" Dual Page System, 4 Mb RAM, 105 Mb Quantum, Mac 101 Keyboard





\$12,759 Mac IIfx, w/1 Floppy Drive, 8 Mb RAM, 325 Mb Internal Hard Drive, Ikegami 24-bit 19" Color Monitor and Video Card, Datadesk, Mac 101 Keyboard



\$5695 Mac Ilci 14" Trinitron System, 4 Mb RAM, 105 Mb Quantum,



Our dedicated, highly-trained service technicians are some of the finest in the country.

#### SYSTEMS

Classic, 4 Mb RAM, 40 Mb Hard Drive...1495 Mac IIsi B&W Full-Page System, 2 Mb RAM, 40 Mb Hard Drive, Mac 101 Keyboard..3519 Mac Ilsi 14" Trinitron, 2 Mb RAM, 40 Mb Hard Drive, Mac 101 Keyboard ......3749 Mac Ilsi B&W Full-Page, 5 Mb RAM, 40 Mb Hard Drive, Mac 101 Keyboard......3749 Mac IIsi B&W 21" Dual-Page, 5 Mb RAM, 105 Mb Quantum, Mac 101 Keyboard...4695 Mac Ilsi 14" Trinitron, 9 Mb RAM, 105 Mb Hard Drive, Mac 101 Keyboard......4679 Mac IIsi B&W 21" Dual-Page, 9 Mb RAM, 105 Mb Hard Drive, Mac 101 Keyboard.. 3699 Mac SE/30 System, 5 Mb RAM, 105 Mb Quantum, Mac 101 Keyboard......4969 Mac SE/30 14" Trinitron 24-bit Color, 5 Mb

......8379 Mac IIX 19" Trinitron 8-bit Color, 5 Mb RAM. 170 Mb Quantum, Mac 101 Keyboard...8195

RAM, 105 Mb Quantum, Mac 101 Keyboard

Mac IIci GS 21" Dual-Page System,r, 4 Mb RAM, 105 Mb Quantum, Mac 101 Keyboard

Mac Ilci 19" Trinitron 8-bit Color, 4 Mb RAM, 170 Mb Hard Drive, Mac 101 Keyboard..8559

Mac Ilci 19" Trinitron 8-bit Color, 8 Mb RAM, 170 Mb Hard Drive, Mac 101 Keyboard.. 8829

Mac IIfx 21" B&W Dual-Page, 4 Mb RAM, 170 Mb Hard Drive, Mac 101 Keyboard..8925

#### We specialize in high-end graphics systems.

Mac IIfx with 8Mb RAM, RasterOps 24-bit Video Card, Trinitron 19" Color Monitor, RasterOps Video Accelerator with 4 Mb RAM, 650 Mb Internal Hard Drive, Datadesk Mac 101 Keyboard, MicroTek 300ZS 24-bit Color Scanner, QMS ColorScript 100 Thermal Color Printer with 8 Mb RAM

\$24,500

Guaranteed: If you don't like it

-800-972-3018

Conroe, Texas 77301 Call: 409-760-2400 FAX: 409-539-4141









## RealTech 24-Bit Color Scanner (includes Adobe Photoshop LE)

Versatile, full-featured desktop flatbed scanner can handle color, gray-scale, line art and text at a price/performance level superior to any **other color scanner.** Uses a single light source, for scanning without vertical color offset. 300 x 300 dpi resolution (in increments of 3 dpi). Scales 1% to 100%.

. 16.8 million colors, 256 shades of gray

Scanning speed 80 seconds (letter size)



## Affordable options to enhance your system.

### SCANNERS

Microtek MS II	1129
Microtek MS 300GS (256GS)	1329
Microtek MS 300ZS	1895
Microtek MS 400GS (256GS)	2859
Microtek Transparency Con-	v.
	1895
XRS Transparency Scanner	3950
ScanMan M32	360

## UNINTERRUPTIBLE **POWER SUPPLIES**

450 AT	329
AP 110 SE	229
AP 360 SX	259
MinuteMan 300	429
MinuteMan 600	695

## TARGUS PREMIUM CASES

IW II Case	4	:
Mac Plus Case	5	(
SE Extended KB Case	7	

## ACC & OTHER PERIPHERALS

Kurta 12 x 12 Tablet	.399
Kurta 17 x 12 Tablet	.659
MacFlip (80 diskettes)	18
Mac 101 Keyboard	.149
Switchboard	

## PERIPHERAL LAND

1.44 Mb Floppy	329
Infinity Turbo 40	699
Infinity Dual Turbo 40	1850
PL 200 Int	1465
PL 250 Int	1765

## CDC HARD DRIVES

Int 325 Mb	1585
Int 330 Mb	(Wren Runner) 2150
Int 650 Mb	2285
Ext 325 Mb	1865
Ext 650 Mb	2565

## **ZOOM MODEMS** All with software included.

## **EVEREX**

Zoom V.42 bis......179

EMAC 60T (Tape Back-up).....665



**EMAC 150T** Tape Back-up \$865

## RealTech HARD DRIVES

Reliable drives at a reasonable price. We exclusively use Quantum mechanisms for maximum performance. Backed by a 2-year warranty.

### **Internal Hard Drives**

40Q	299
105Q	439
170Q	795
External Hard Drives	

## 105Q......539 170Q...... 895

## DAYSTAR ACCELERATORS

Mac II, Mac IIX	
25 Mhz	1095
40 Mhz	1389
50 Mhz	1899
Mac Ilcx (w/Shpg. & In	istall.)
25 Mhz	1719
40 Mhz	1999
50 Mhz	2519
Mac Ilci	
40 Mhz	949
50 Mhz	1679
Fast Cache Ilci	279
RAM Powercard	
SCSI Powercard	1095
1 Megabyte SIMMS	Call
4 Megabyte SIMMS	Call
Classic Memory	Call

## **6 REASONS TO** ORDER FROM US (besides saving money!)

- 1. 30-day money back guarantee on all hardware (except for special-order items). No ifs, ands, or buts!
- 2. Toll-free tech support when you need advice or want to order.
- 3. Pay when shipped... We charge your credit card only when your order is shipped—not when you place the order.
- 4. Overnight delivery when you need it.
- 5. Business leasing avail-
- 6. Installation & training anywhere in the U.S.

## "WE'RE NOT HAPPY (unless you are!)

We want you to become a repeat customer. So we give you discount mail-order prices...superior service & selection...an unbeatable hassle-free warranty...tollfree tech support...and an unsurpassed return policy.

What's more, we do it all with a smile...because that's what you deserve. '

Several members of our management team (I to r): Barbara, Jim, Lew, Réal.



# **WE'LL BUY IT BACK!**

## ASK ABOUT OUR BUSINESS LEASING



1-800-MAC-0052

CANADA/INTERNATIONAL

1-813-886-9534

## CPU'S & MORE.

## (We do custom configurations!)

We stock Apple's complete line everything from the Classic to the Mac Ilfx. Call for the lowest prices around!

## Macintosh II LC

2Nth RAM, 40Mb internal & keyboard with Apple 12" mono \$2025 with Apple 12" RGB \$2235

 Mac IIsi 2/40
 \$2575

 Mac IIsi 5/80
 \$3089

 Mac IIfx 8/210
 \$6599

 NEW Mac Portable 2/40
 \$2999

 Apple Extended Keyboard\*
 \$160

 Apple Standard Keyboard\*
 \$90

 \*add \$20 for non-system purchases
 \$90

## **VIDEO & MORE...**

Apple 12" Mono \$215 Apple 13" RGB Color \$675 Apple 12" RGB Color \$425 Apple Two-Page Mono \$1299 Apple 15" Portrait \$750 Apple 8•24 Video Card \$535 Apple 8.24 GC Video Card \$1325 Apple 4/8 Video Card \$425 Apple Universal Monitor Stand \$75

NEC MacSync 14" RGB

\$485

## NETWORK & MORE.

Mac II EtherTalk NB Card \$499 AppleShare 2.0 \$410 Telephone Network Adapters \$19

> We carry Asanté and Novell products for your Network

## PRINTERS & MORE...

(We carry Apple's Complete Line!)

Personal LaserWriter NT \$2175 TI MicroLaser PS-35 \$1599 HP DeskWriter with LocalTalk \$679 ImageWriter II \$410 CoStar LabelWriter \$199

## DRIVES & MORE..

	Internal				
				19 msec	
ı	ETC 52	1" 17 mse	c Cl	assic/si/LC	\$299
ı	ETC 105	1" Quantu	m 1	1 msec	\$470
ı	ETC 105	Quantum	3.5	19 msec	\$420
	ETC 170	Quantum	3.5	11 msec	\$699
		Quantum			\$765

External
ETC 40 Quantum 3.5 19 msec \$365
ETC 52 Quantum LPS 17 msec \$384
ETC 105 Quantum 3.5 11 msec \$555
ETC 170 Quantum 3.5 11 msec \$789
ETC 210 Quantum 3.5 11 msec \$849

ETC 45R Syquest Removable includes software, SCSI cable and Cartridge

## MISCELLANEOUS.

LaserWriter Toner Cartridges \$109
Personal LaserWriter Toner Cart. \$89
Printer Cable \$10
Syquest Cartridge \$67
Mac Ilsi NuBus Adapter Card \$189

SIMMS LOWEST PRICES IN U.S.!

## RasterOps Showcase.

We will beat the Competition's Price (RESTRICTIONS APPLY)

Mac II Systems

RasterOps 8L 19" Trinitron \$4209 RasterOps 24L 19" Trinitron \$5569 Business Color 19" Hitachi \$2539 Clearview/II Monochrome 19" \$1499 Clearview/XL Monochrome 21" \$1499

Call for info on RasterOps' New Systems

## Mac Color Boards

Wac Oolor Doalus	
RasterOps 24si	\$750
RasterOps 24S	\$540
PasterOps 8S	\$339
RasterOps 8L	\$1359
RasterOps 24L	\$2700
Accelerator (8L, 24L, 24S, 8S)	\$336
ColorBoard 264/SE30	\$589
RasterOps 364	\$880
RasterOps 24 STV	\$1220
RasterOps NTSC Expander	\$475
RasterOps TV Tuner (NTSC)	\$336

## RADIUS SHOWCASE.

Pivot Display for Built-in video \$849
Pivot System for Mac II \$1139

DirectColor 8 Interface Card \$1229
DirectColor 24 Interface Card \$2339
DirectColor/GX Interface NTSC \$709

Color Display/19 \$2789 Color Display/21 \$2919

Mac & MORE Inc. Your Super Store!

5426 BEAUMONT CENTER BLVD. SUITE 300; TAMPA, FL. 33634 USA

M-F 9:AM-9:PM • SAT 9:AM-5:PM

Please circle 360 on reader service card.

Terms and Conditions

Payment: Mac and MORE accepts Visa, MasterCard, American Express, CODs, and Purchase Orders. 5% surcharge on AMEX orders. CODs are shipped Cash/Certified Check up to \$2500. Corporate and School Purchase Orders at Net-15 for orders over \$1000 only. Other restrictions may apply. Call for details.

Warranties: We honor all manufacturer's warranties on systems sold through Mac and MORE. Returns: All orders returned or refused will be charged a 15% restocking fee. Call for an RMA before returning. Returns must be in original packing with software seals unbroken. Terms, Conditions, and Prices are subject to change without notice. Ask for details when ordering.

183

# With A Top Ten List Like This, Pavid Lette

1 MB SIMMs \$35

E PINE • WORLD PERFECT • ZOOM



TI microLaser PS35 \$1595



MicroTek 300ZS 24-Bit Color Scanner New! with Photoshop! \$1649



Quark XPress 3.0 \$449



PLI Infinity 45MB Removable HD \$639



Syquest Cartridge SQ400 44MB cartridge \$65



Shiva Net Modem v.32

4. HP DeskWriter 300 DPI inkjet printer \$669



9. Seiko CM 1445 \$545



Macintosh IIfx \$6375



10. Macintosh LC Low priced color Macintosh \$1715



21722222	
SYSTEMS	-
SYSTEM LEASING NOW AV	AILABLE
Mac Classic	825
MacLC	1715
Mac Ilsi	2640
Mac SE/30	2645
Mac Ilci	3950
Mac Ilfx	6375
NEW! Macintosh Portable	Call
Macintosh Portable	2999
HARDWARE I	
RasterOps 364	829
RasterOps 24 STV	1152

NEW! Macintosh Portable Macintosh Portable	Call 2999
HARDWARE I	
RasterOps 364	829
RasterOps 24 STV	1152
RasterOps 24si	699
RasterOps 24S	499
RasterOps all products available	Call
SIMMs: all types/best prices	Call
Apple 13" HighRes RGB	639
Apple ImageWriter II	415
Apple LaserWriter II NTX	4199
Apple Personal LaserWriters	Call
Abaton 300ZColor/GS Scanner	1599
Abaton Interfax 24/96	275
Asante EtherNet Product Line	Call
Caere Typist	425
CD ROM Libraries	Call
Courier 9600 V-32 MNP-5	695
Daladesk Mac 101 Keyboard	123
Datadesk Switchboard	149
Daystar Digital all products	Call
Dove Fax 24/96	263
Dove MacSnap all Models	Call
E-Machines T16	1995

E-Machines T19

GCC PLP II Laser Printer

GCC PLP IIS Laser Printer

CCC DI DIII Distri	4040
GCC BLP II Laser Printer	1649
GCC BLP IIS Laser Printer	2399
GCC Products	Call
Hayes Smart Modern 2400	325
Hewlett Packard Lasers Hewlett Packard DeskWriter	Call
	669
Keytronic MacPro Plus Keyboard Logitech ScanMan 32	299
Mac 386	1510
Mac Recorder Digitizer Only	89
Macintosh LC VRAM Upgrade	Call
Magnavox 14" Color	469
Marathon 030/030x	459
Mass Micro Quick Image 24	649
Microtek 300ZS	1649
Microtek 400GS	2499
Motorola PMMU 68851	109
NEC Monitors-all models	Call
NEC CD-ROM CDR 35	Call
NEC CD-ROM CDR 72	Call
NEC MacSync HC	420
NEC Silentwriter II Model 90	1610
Novi Quick 30 Accelerator	799
PhoneNet Star Controller	739
PhoneNet 10 Pack	188
Practical Peripherals 2400b	164
Practical Peripherals MacPak	225
QMS PS-410	1959
QuickMail 10 User	285
QuickView Z21 SE	1589
QuickView Z21 II	1659
O. ital A from 724 10	2240

399	Silverview S4/S8
Call	TI microLaser PS17
325	TI microLaser PS XL 17
Call	TI microLaser PS XL 35
669	Timbuktu/Remote Access P
110	Toshiba CD-ROM XM 3201
299	Turbo Mouse 3.0
510	TurboStar
89	ZOOM 2400 Baud Modern/
Call	DRIVES & TAPES
469	Bernoulli: all Models
459	CMS: all Models
649	CIVIO, dil IVIDUGIO
649	-
499	JetFill
109	ICU'III
Call	
Call	The clean, inexpensive solution for recharging
Call	HP DeskWriter car-
420	tridges. Pennanent ink.
610	Colors available.
799	\$10.95

2310 686

1475

176

Call



\$10.95	
Cutting Edge all Models	
DaynaFile 360k	
DaynaFile 360k/1.2Mb	
Irwin 40Mb/80Mb Tape	799
MicroTech 50Mb Removable	
PLI Infinity 40 Removable	
PLI Turbo Floppy 1.4	
Quantum ProDrive 40Mb	
Quantum ProDrive 80Mb	
Quantum ProDrive 105Mb	
Quantum ProDrive 170Mb	
Internal/External Drive Kit	2

639

389

405

689

Managing Your Money

MacWrite II

0	Syquest 44Mb Mechanism Syquest 44Mb Cartridge	399 65	MasterTracks Pro MathCAD 1.0
9	SOFTWARE STATE		Mathmatica SE
9	4th Dimension	450	MS Word 4.0/Exce
9		452	MS Excel 3.0
2	Accountant Inc.	306	MiniCAD+
	Acius File Force Adobe Illustrator 3.0	222	ModelShop
1	Adobe Fonts	330 from 56	Norton Utilities Ma
9	Adobe PhotoShop	485	OmniPage
9	Adobe Type Manager	51	On Location
	Adobe Type Reunion	34	PageMaker 4.0
ı	At Once!	273	Passport Encore
ii	Can Opener	57	Passport Midi Inter
	Canvas 2.1	172	PixelPaint Professi
7	Carbon Copy 2 Pack	153	Quark XPress 3.0
	Cricket Presents	280	Quick Keys II
	Double Helix 3.0	325	Ready Set Go
	Dreams	282	Retrospect
	Farralon MediaTracks	171	Simply Accounting
	Fastback 2.1	97	Soft PC
П	FileMaker Pro	181	Stratavision 3D
L	Fontagrapher 3.2	Call	StrataFlight
•	Foxbase +Mac	265	Stuffit Deluxe 2.
-	FrameMaker	642	SUMII
1	Freedom of the Press 3.0	229	SuperCard 1.5
4	Freehand 2.0	297	Think C 4.0
9	Freehand 3.0	Call	Think Pascal 3.0
9	FullWrite Professional	237	TOPS 3.0 Network
1	Letraset Color Studio 1.0	640	Turbo Tax
9	Letraset Design Studio	541	Ultra Paint
3	MacDraw II	241	Vellum
9	Macintax '90	52	
9	MacProject II	345	Virtual 030
2	Macromind Director 2.0	540	White Knight

(A)COURT LIDENCE LID	100
MathCAD 1.0	264
Mathmatica SE	429
MS Word 4.0/Excel 2.2	225/225
MS Excel 3.0	Call
MiniCAD+	439
ModelShop	340
Norton Utilities Macintosh	74
OmniPage	496
On Location	70
PageMaker 4.0	485
Passport Encore	335
Passport Midi Interface	63
PixelPaint Professional	356
Quark XPress 3.0	449
Quick Keys II	87
Ready Set Go	252
Retrospect	131
Simply Accounting	201
Soft PC	215
Stratavision 3D	279
StrataFlight	109
Stuffit Deluxe 2.0	48
SUMII	87
SuperCard 1.5	180
Think C 4.0	153
Think Pascal 3.0	159
TOPS 3.0 Network Bundle	172
Turbo Tax	43
Ultra Paint Vellum	115
Virex	410 46
Virtual 030	114
White Knight	75
WingZ Write Naw 2.0	235 111
Write Now 2.0	111

QuickView Z21 IQ

Radius Pivot Monitor RasterOps ClearVue/GS

4100

839

HOW TO ORDER: Payment: Visa, Mastercard, Discover (no surcharge), checks, and COD's. \$6,000 maximum on COD's Tax: Texas residents only-add 8% sales tax. Prices and items subject to change and availability. International: 5% surcharge on international orders. Mail In: Orders accepted with a \$10 surcharge. Terms: You are not charged until your order is shipped. Phone charges cannot be refunded. Shipping: minimum \$5-UES Ground, Blue, Red. Federal Express, Emery, Airborne. \*Returns must be in original condition and package. Seal must not be opened on software. Returns may be subject to a restocking fee. Ask for details when ordering. Bottom Line Distribution cannot be responsible for errors in typography or photography.

Same day delivery available in select U.S. cities. Delivery charges vary with warehouse vicinity. Offer does not apply to some hardware and software items. Call Bottom Line for details.



125

113

Fax: 1-900-420-87 International Fax: 512-476-6399 2204 Rio Grande, Austin, Texas 78705

# 80 mb A A LOI



## **Five Simple Reasons:**

- 1. Quality: While our products may not be fancy, our cases are all meticulously manufactured to our specifications, none of those light-weight imported knock-offs. They utilize the best auto-switching digital power supplies and quiet, high capacity fans. Our connectors are all name brands of the finest quality. Our drive mechanisms speak for themselves. Quantum, WREN, Maxtor, Conner, Syquest, Teac.... Industry standards... the best available.
- **2. Knowledge:** Our helpful, knowledgeable sales associates will help you determine what is the best drive for your needs (not just the most expensive). They'll help you navigate those thorny termination issues, and help you decide the right drive for your particular hardware configuration.
- 3. Support: Our trained technical associates will help you address any questions you might have about an **APS** drive. Are you running into conflicts when you use certain combinations of hardware and software? Our technical associates can help you sort through the kinds of problems that plaque both the novice and the power user.
- 4. Service: Absolutely the best in the industry! If we tell you we have it, WE DO! We'll ship your drive when we promise, as we promise. We never charge your credit card until after your order has shipped from our factory. In the unlikely event that you have a problem with your drive, our exclusive "30 day performance guarantee" goes immediately into effect. We'll ship you a new drive over night and have the suspect drive picked up at our expense. After the first 30 days, our warranty turn-around time is 48 hours (often 24). We'll Ship back to you via overnight air' our expense. Our one and two year warranties include a thirty day money-back guarantee. Your toll-free phone call to either sales or technical support is answered by a real person 24 hours a day, none of those frustrating voice mail mazes that you find other places. Our goal is to care for you better and faster than the dealer down the street.
- 5. **ECONOMY:** Our prices speak for themselves! **GPS** consistently offers the lowest prices on immediately available inventory in the business. Our pricing is based on assembled, formatted\* products with everything you need to plug-n-play. Our external drives are available in externally terminated (with terminator) or internally terminated units, your choice. Need a Mac to SCSI, or daisy-chain cable? Take your pick, no extra charge. Need multiple units? Don't pay for the same piece of bundled software three times, buy them only if you need 'em\*. We have outstanding values on several "industry standard" drive utility products at as much as 80% off retail prices!

  \*Some limitations may apply

High Performance Drives for the Classic, Lc & Si

# 5399

Performance
30 DAY
Guarantee

## Quantum 10 - 12ms Access

Capacity	Internal	External
40mb	<sup>\$</sup> 259	\$349
<b>52</b>	329	429
105	379	469
105 <sub>LPS</sub>	499	599
120	639	729
170	729	829
210	799	899

## WREN Drives 10.7 - 16ms Access

173	Half Height	999	1099
300	Half Height	1399	1599
300m	b	1249	1449
330	(RUNNER)	1499	1699
425	Half Height	1699	1799
600		1699	1899
630		1999	2199
1 Gig		2799	2999

- Quantum & Maxtor 200 Internal Drives fit Mac II/IIX/SE/SE30/Cx/Ci/Fx
- Conner & Maxtor 40 and 80 Internal drives fit Mac IISi/LC and Classic
- WREN Internal Drives fit Mac II/IIX/IIFx

## MAXTOR 15 - 17ms Access

Capac	ity	Internal	External
40	Low Profile, fits LC, Classic & Si tool	\$299	\$389
80	Low Profile, fits LC, Classic & Si tool	399	489
200	D	759	859

## Conner 25ms Access

10 20	Low Profile, fits LC, Classic & Si tool	\$319 <b>599</b>	Internal Configurations Only
----------	--	---------------------	------------------------------------

Syquest 45 meg \$529 Syquest 45 meg Removable 999

All Include one cartridge • \$72 per cartridge for additional cartridges

# Teac I55mb Tape Include Retrospect \$629 WangDAT All Include one 1699

## **Dual Drive Combo's**

I gig WREN/WangDAT	s 4799
600 mb/WangDAT	3599
600/Teac 155	2599
600/SyQuest	2399
300/Teac 155	2049
300/Syquest	1999
330/Teac 155	2399
330/SyQuest	2399

- · All Tape Combo's Include one cassette and Retrospect!
- All SyQuest Combo's Include one Cartridge

ASK ABOUT OUR OTHER COMBOS, SUN & IBM SCSI DRIVES

All Drive products carry a 30 day Money-back guarantee. Quantum and Syquest Drives carry a two year "parts & labor" disk-for-disk replacement warranty. WREN, Maxtor, Teac. WangDAT and Syquest Cartridges carry a one year "parts & labor" disk-for-disk replacement warranty. All Haird Drives include all brackets, cables and cords and LED's required for operation. All Haird Drives come pre-formatted with Apple's latest stable System software. I B.AMB of Publicly Distributable software from the B'MUG Library, and the "ALLIANCE POWER TOOLS" SCST formatter/Partitioner. If your drive iails to perform properly in the first 30 days and our technical support staff can't solve the problem over the phone, we'll ship you a replacement drive overnight and have your defective drive picked up at our expense. Offer is subject to some limitations. Products being returned for credit and international orders do not apply.



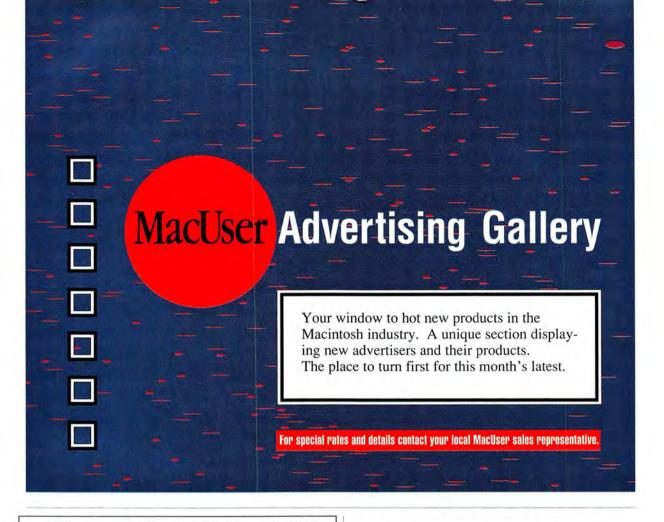
2900 S. 291 Hwy = Lower H = Independence, MO 64057 = (816) 478-8300 1-800-233-75

0014 800 125 875

Toll Free from Australia

0800-897545 Toll Free from U.K. Toll Free U.S. and Canada
VISA/MC, Corp., Gov., Univ. PO's, NO SURCHARGE
AMEX ACCEPTED
International Orders Call (816) 478-8300

9:30am - 7:00pm Central Time fax: (816) 478-4596 24hrs.



# MACINTOSH SOFTWARE PROTECTION



Don't lose software profits—use SecuriKey® — a unique hardware device that prevents unauthorized use and duplication of software.

- DESIGNED FOR THE MACINTOSH
- · Allows unlimited backup copies
- Does not permit duplication
- Can record software usage
- Available with custom logos
- · Variety of programmable options

CALL US TODAY! 1 (800) 456-2587



4750 Wiley Post Way, Suite 180 Salt Lake City, Utah 84116 FAX (801) 575-6621

## Install your Large Hard Drive with a Click of Your Mouse.

Installation of virtually any SCSI drive is easy and only minutes away with Ontrack's Disk Manager -Mac Hard Disk Installation Utility for Macintosh.

Ontrack, the world leader in disk management software, gives Macintosh users added hard drive options with Disk Manager - Mac. Select the SCSI drive of your choice, and create a macintosh that is easier to use and less expensive to upgrade.

Install any SCSI drive · Create customized partitions · Complete with utilities to manage and secure your data - including password protection and

a removeable drive option

Available with or without a hardware installation kit

 FREE TECHNICAL SUPPORT! Technical Support: 612-937-2121

1-800-752-1333

International: 612-937-1107 · Fax: 612-937-5815



Please circle 358 on reader service card.

Please circle 374 on reader service card.

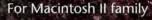
Introducing DiskTwin, A Revolution In Macintosh Backup.

ARD DISKS CRASH. Your Macintosh is only as useful as the data that's stored on your disk.

Unfortunately, it's not a matter of if, but when, your disk will crash. STOP WORRYING about losing data or time when a hard disk fails. While other backup systems can only take periodic "snapshots" of your disk to a tape or a floppy, DiskTwin runs continuously, making an up-to-the-instant backup of your primary disk on a second disk. When your primary disk fails, you have a complete backup that comes online automatically, so FORGET ABOUT DOWNTIME. Whenever your Macintosh saves data to disk, DiskTwin simultaneously saves to a twin disk. And DiskTwin WON'T SLOW YOUR MACINTOSH DOWN With removable media like erasable optical, SyQuest, or Bernoulli drives, DISKTWIN GIVES YOU

ARCHIVAL STORAGE. DISKTWIN IS PERFECT FOR APPLESHARE file servers because it

runs transparently, without degrading performance, while AppleShare is running. And DiskTwin maintains all user and group privileges. If you hate to backup, YOU'LL LOVE DISKTWIN.





or SE/30



computers.





619/279-2100 • FAX 279-1069 • AppleLink D0593

Please circle 15 on reader service card.

HARDWARE

BAR CODE

# MARKETPLACE

331-341

331

DIM CODE	
CD-ROM	
COMPUTER SYSTEMS	331-333
DATA ACQUISITION	
DATA RECOVERY SERVICES	
DISK DRIVES	334-336
DISKETTES	336
GENERAL	336-338
INSURANCE	
MEMORY UPGRADES	338-340
PERIPHERALS	
PRINTERS	340
SCANNERS	
COPPRIADE	24.24
SOFTWARE	341-345
ACCOUNTING	
BAR CODE	
BUSINESS	
BUSINESS TIME MANAGEMENT	
CD-ROM	
DESKTOP PUBLISHING	342
EDUCATIONAL	342-343
EMULATION	343
ENGINEERING	343
ENTERTAINMENT/GAMES	343
FINANCIAL	343
FONTS	343
GENEALOGY	343
GRAPHICS	344
HEALTH	344
LANGUAGE TOOLS	344
LOTTERY	344
MEDICAL/DENTAL	
MUSIC/MIDI	
PRINT DRIVERS/SPOOLERS	
PUBLIC DOMAIN	
SHAREWARE	
STACKWARE	

MISCELLANEOUS	345-347
ACCESSORIES	345
DATA CONVERSION SERVICES	345
DESKTOP PUBLISHING SERVICES	345-346
DISKETTE COPY SERVICES	346
FURNITURE	
INSURANCE	
SERVICES	
SLIDE IMAGING SERVICES	347
SUPPLIES	

## ADVERTISING RATES AND INFORMATION

*MacUser Marketplace* is a special economical section for product and service listings.

Advertisements are grouped by category and sold by column inches. Second color option available.

Standard Directory Listings are also available for a minimum of 3 issues at \$415.00 per issue (\$1,245.00 total).

For additional information call 212-503-5115.

## CLASSIFIED ADVERTISING STAFF

## One Park Avenue, New York, NY 10016 (212) 503-5115 or (800) 825-4ADS

Director, Classified Sales Sales Manager Paul Stafford Paul A. Fusco Advertising Coordinator Group Advertising Director Wanda D. Brown Kathryn J. Cumberlander Advertising Support Production Director Manager Anne R. Brockinton Monica Dixon Production Manager Production Supervisor Carolyn Bingham Bessi Dion Production Coordinator Chris Meyer

## ACCOUNT MANAGERS

KAREN A. CASTORINO (212) 503-5140
AZ, CA (213, 619, 714, 818), DC, DE, HI, MD, NH, NB, NV, PA, SC, TN, UT, VA, WI, WV, CANADA and Overseas
THOMAS P. KOLETAS (212) 503-5136
AL, FL, GA, MA, ME, MI, MO, ME, NJ, NC, NY, RI, TX, and VT
DENNIS M. LEAVEY (212) 503-5111

AK, AR, CA (209, 408, 415, 707, 805, 916), CO, CT, IA, ID, IL, IN, KS, KY, LA, MN, MT, ND, NM, OH, OR, OK, SD, WA, and WY

## HARDWARE/

BAR CODE

## EZBarcode®



Bar Code Reader for Macintosh, Mac Plus, SE, II PC-WEDGE II including plastic wand Metal Wand .....add \$60

Mag Stripe Reader . . . . add \$100 • Works with any program — no software required • Connects to ADB port or between keyboard and computer • Recognizes bar code type automatically
• Reads all standard bar code types • Supports full
ASCII, check digits, add-ons, preambles, postambles,
macros, and more • Automatic setup from bar code

TimeKeeping Systems, Inc. 1306-V East 55th Street • Cleveland, OH 44103 Phone: (216) 361-9995 • Fax: (216) 361-0030

## **BAR CODE &** MAGNETIC STRIPE READERS FOR MACINTOSH PLUS, SE & II

Connects on keyboard or ADB Requires no additional program or port Does not affect keyboard or mouse Industrial quality, heavy-duty units Also available

SmartCard encoder/reader Magnetic encoder Code & 39 UPC Printing Software Portable Bar Code Reader

**TPS Electronics** 4047 Transport Street Palo Alto, CA 94303 856-6833 1-800-526-5920

415-856-6833 1-800-526-Telex: (Graphnet) 371 9097 FAX: 415-856-3843 CIRCLE 201 ON READER SERVICE CARD

## CD-ROM

## CD ROM, Inc.

CD-ROM, WORM. MAGNETO-OPTICAL DRIVES CD-ROM DISCS FOR IBM AND MAC OPTICAL CONSULTING SERVICES

- PUBLISHING
- DISTRIBUTION NETWORKING

QUALITY PRODUCTS AND SERVICES AT COMPETITIVE PRICES

FREE CATALOG TEL 303-231-9373 1667 COLE BLVD., SUITE 400 GOLDEN, COLORADO, 80401, USA FAX. 303 - 231-9581, CIS 72007,544

VISA/MC/AMEX/GOVT POs CIRCLE 202 ON READER SERVICE CARD

## MacUser Marketplace

To place your ad call (212) 503-5115 or (800) 825-4ADS

## COMPUTER SYSTEMS

700 SOUTH UNIVERSITY PARKS DR WACO TX 76706

CPU's (Se. Se30, Si. Lc. II, Cx. X, Ci. Fx) Apple Laser Writer Plus, IInt, Ntx Apple Color & Monochrome Apple Scanner 300dni 16 GS Sharp JX450 11x17 24-bit scanner HP Scan-Jet 400dpi 16 GS Quark 2.1 \$30 Upgrade to 3.0

## We Buy and Sell New and **Used Systems Any Quantity**

### Call us for a quote on your mac

Can	us for a quote on your ma	ac
Call	Sigma L-View mono 19" w/card	\$1295
Call	Dest Flatbed scanner w/sheetfeeder	\$1495
Call	Rodime 140 meg HD	\$695
\$1095	Mitsubishi 16" color w/card	\$1595
\$3995	Sony 13", 14", 19" Trinatron	Call
\$795	RasterOps and Radius	Call
\$395	Call for Software List	Call

## SAL

(817) 754-2120 University And Corporate PO'S Welcome

CIRCLE 203 ON READER SERVICE CARD

## R U NUTS ABOUT MACS?

Low priced Mac Systems We will meet or beat any advertised price for Mac Radius, SuperMac, GCC etc....

Call: 1-800-NUT 4MAC

# Parts/Systems

New & reconditioned

Shreve

Systems

Call us! We Buy & Sell! 3804 Karen Lane
Bossier City, La. 71112 Mac-IBIVI No quantity too large!

FAX 318-742-2799 Call for catalog!

CIRCLE 205 ON READER SERVICE CARD

## EXSEL DIRECT 1-800-624-2001

In NY: 716-272-8770 Refurbished Macs!

Mac Plus . . . . . . . . . . . . \$ 579 Mac SE Dual Floppy ... Mac SE/20..... 1149 Mac SE/30 40MB..... 2699 Mac II X, CX . . . . . . . . . CALL Mac II w/40MB ..... 2299 Imagewriter I . . . . . . . . Imagewriter II..... 379 Laser Writer . . . . . . . . . . 1399 Laser Writer Plus . . . . . 1599 800K External Drive.... 139 20 MB External Drive ... 259

2200 Brighton-Henrietta Townline Rd. Rochester, NY 14623 All units refurbished with 90-Day Warranty. MasterCard, prepayment, C.O.D. certified acc l units resurciants
sterCard, prepayment, C.O.D. certified according to Change. We buy MAC's

CIRCLE 206 ON READER SERVICE CARD

# MAC II to MAC FX \$3288\*

MAC SE to SE 30 \$1988\*

UPGRADE includes: NEW Logic Board SONY FDHD Floppy Drive, One-year Warranty and installation with exchange. **POWER SUPPLY** MAC OF \$188

Mac

Mac Classic • 2Mb/40 .. Mac IISi 2Mb 40Mb \$2625 Mac IISi+5Mb+80Mb. \$3175 \$1840 Mac LC+2Mb+40Mb... Mac IICi+4Mb+80Mb \$4395 Mac IIFx • 1 Dr. \$5850 Mac Port. • 2Mb • 40Mb ... \$2969 Mac Port. • 4Mb • 40Mb ... \$3299 Mac Port. -4Mb-40Mb ... \$3299
Apple 12"/13" RGB . \$429/709
Apple Portrait Monior ... \$796
Sigma 15" Monit/card ... \$899
Sigma Pageview GS ... \$650
Seiko 14"Clr Monitor ... \$595
Seiko 19"Clr Monitor ... \$1969 Abaton Laserscript ......\$2099 H.P. Deskwriter. \$695 Apple Scanner ....... \$1359 Abaton Scan 300GS ...... \$969 & Scan 300Color 24bit \$1210 Mirotek 300ZS Scann. \$1799 Nikon LS-3500 \$8700 030 or Nu Bus Adapt...

MACMARKET/GMCC 818-981-4210 FAX:818-981-4218

CIRCLE 208 ON READER SERVICE CARD

## 1-800-334-KIWI

Mac Classic 40/2mb.....\$call Mac LC 40/2mb.....\$call Mac LC 105/4mb......\$call Mac IIsi 40/2mb.....\$2695 Mac IIsi 105/5mb......\$3295 Mac SE/30 105/5mb...\$3595 Mac IIci 105/5mb......\$4495 Mac IIci 170/5mb......\$4795 Mac IIfx 105/4mb.....\$6595 Mac IIfx 170/4mb.....\$6895 Apple monitors.....\$call Imagewriter II.....\$435 Personal Laser NT.....\$2295 Laserwriter IINT.....\$3100 Laserwriter IINTX....\$4195 H.P. Deskwriter.....\$725 All items new. 1 year warranty. Most items in stock today. Visa & Mastercard add 2% C.O.D. orders accepted.

# KIWI COMPUTERS P.O. Box 67381 Los Angeles CA 90067

US & Canada (800)334-5494 International (213)553-4507 Fax(213)286-9667 Mon-Fri 8.30am-4,30pm PST

COMPUTER SYSTEMS

The Best Products from Raster Ops

The Best Prices and service from



RasterOps Video ColorBoard 364	\$890
RasterOps Business Color System	\$2650
RasterOps ProVideo 32	\$1390
RasterOps 24L 19" Color System	\$5730
RasterOps ColorBoard 24si	\$790
RasterOps Video ColorBoard 24stv	\$1290
RasterOps ClearVue/XL 21" Mono	\$1580
Special for the new Macintosh LC	
RasterOps ClearVue/LC 19" Mono	\$1290
RasterOps 8LC 19" Color System	\$2730

Nationwide

1-800-626-1889

Authorized RasterOps Dealer

6113 South 380 West, Salt Lake City, Utah 84107 (801)566-4446

CIRCLE 210 ON READER SERVICE CARD



26 Keewaydin Drive Salem, NH 03079 800-666-5612

Laser Printers

Portables



Next Day Delivery Anywhere in the U. S. A.

**PC** Computer Rental

And a host of other peripherals Call Toll-Free

WE BUY YOUR USED MAC EQUIPMENT FOR TOP DOLLAR. CASH! WE SEL MAC'S AT DISCOUNT! CALL FOR QUOTE. RENTEX INC. (800) 545-2313, (617) 423-5567

## **MAC SYSTEMS**

(800) 767-7706 (800) 732-5678 (818) 901-1001 FAX (818) 891-3285 FAX (213) 470-8099 2604 MIDVALE AVE L. A., CA 90064

MAC CLASSIC 2MB 4MB	CALL
MACLC	CALL
MAC II CX ALL MODELS	CALL
MAC II SI 2MB 40MB	2695.00
MAC II SI 5MB 80MB	3495.00
MAC II CI 5MB 80MB	4595.00
MAC II CI 8MB 170MB	5095.00
MAC II FX 4MB 105MB	6750.00
MAC II FX 8MB 170MB	7295.00
MAC PORTABLE 1/40MB	2995.00
DATADESK KEYBOARD	165.00
DATADESK SWITCHBOARD	175.00
APPLE STANDARD KEYBOARD	99.00
APPLE EXTENDED KEYBOARD	175.00

SYSQUEST REMOVABLE	CALL
NEC CD ROM PORTABLE	499.00
TOSHIBA CD ROM	750.00
STORAGE DIMENSIONS CD	CALL
GCC ACCESSORIES	CALL
GCC PLP II PS UPGRADE	CALL
NEC SILENTWRITER II	
MODEL 90 6PPM 2MB	4.00
POSTSCRIPT PRINTER	1795.00
QMS 410 PS PRINTER	2195.00
PANASONIC PS 11PPM	2195.00
APPLE PERSONAL NT	2395.00
LASERWRITER II NT	3095.00
LASERWRITER II NTX	4095.00

International Orders Welcome

One year warranty. Most items in stock. All merchandise new. No tax outside California Visa & MC add 2%. Amex add 4.5%. Next day air shipping available.

APPLE IMAGEWRITER II	439.00
APPLE PERSONAL SC	1439.00
KODAK DICONIX 150M	439.00
APPLE 13" RGB MONITOR	720.00
APPLE PORTRAIT MON	249.00
NEC MACSYNC MONITOR	475.00
RADIUS PIVOT WACARD	1195.00
RADIUS 19" TPD W/CARD	1395.00
RADIUS 21" TPD W/CARD	1695.00
RADIUS DIRECTCOLOR 8	3995.00
IKEGAMI 20" COLOR 8	2695.00
IKEGAMI 20" COLOR 24	3895.00
SUPERMAC 19" COLOR 8	2395.00
PANASONIC 1024 X 768	499.00
SONY 1304 1024 X 768	699.00

ALL PRICES SUBJECT TO CHANGE

CIRCLE 211 ON READER SERVICE CARD

**COMPUTER SYSTEMS** Category continued on the next page.

COMPUTER SYSTEMS

## You won't get your Mac overnight.

But, in about a week, you'll get the best

If you really need it tomorrow, call the guys who slam out boxes. Or, call us

You'll also get toll-free tech support, and free warranty repair-or-replacement via Federal Express.

Mac-In-Stock 1991 2M Group, Inc El Segundo, CA Fax: 213-322-1486 • International: 213-322-1455

...and other things that don't happen overnight.

> Mac•In•Stock 800-633-1538

CIRCLE 215 ON READER SERVICE CARD

# Computer Design & Graphic Systems™

"Only Graphic Systems by the Graphic Specialists"

Software/Hardware New & Used . Complete line of Macintosh & all peripherals Over 2400 specially priced products for the Graphics User

Abaton Interfax 24/96 \$294
"NEW" Abaton Laserscript LX \$1499
Abaton 300/Color Scanner
with full Adobe Photoshop \$1599
Abaton 300/GS scanner
with Digital Darkroom \$1099
"NEW" Raster Ops displays
for LC, st and Classic CALL
Raster Ops 19' gray scale \$1417
NEW" Mobius accelerated
displays for SE, LC, st, II (
Radius Pivol for skici \$889
II Raple 13' RRB \$649
II



SuperMac Products CALL
Oume Express Printer \$3429
DMS PS-410 \$1989
DMS PS-410 \$1989
GC BLPI \$1699
NewGen PS-480 \$4099
CD-ROM specials CALL
Seiko Color Laser \$5149
MCC Color Laser \$5149
MCC Color Laser \$5899
PLI Turbo 44 removable \$599
CDS syquest Removable 45
with catridge - 2year warty, \$569
CDG Power40 Hard Drive \$379
Internal & External Quantum Drives
Internal & External Quantum Drives

As always - FREE SHIPPING . GIC Leasing Available Order Desk 1 ▲ 800 ▼ 741 ▲ 6227 Support 1 4813 7278 45161

6-1 ParkShore Center - Ft. Myers, Fl. 3390: CIRCLE 216 ON READER SERVICE CARD

In U.S.A. Call: 1-800-729-7031 New Jersey

In Canada Call: 1-800-268-7805 Toronto, Ontario

Brand new, latest models in stock! One Year Warranty Included

New and Used: Bought and Sold

The Best Prices, Quality and Service. Period.

Toe

SE CIRCLE 217 ON READER SERVICE CARD

**Tell Your Source!** 

I Found it in

**MacUser Marketplace** 

## MAC IN TOWN, INC.

BUY SELL TRADE MAC COMPUTERS NEW USED MAC

MICROTECH \$1699

SYQUEST CARTRIDGES 69.95

DEMO SALE \$5995

FOR BEST PRICE IN AMERICA ON MACINTOSH CALL US LAST

DON'T SELL YOUR OLD MAC BEFORE YOU CALL US D QUANTITY TO SMALL OR LARGE WE BUY YOUR DEAD MACINTOSH NO QUANTITY TO SMALL OR LARGE CALL (201) 224-4273 FAX (201) 224-6449

CIRCLE 218 ON READER SERVICE CARD

# Computer Center

Mac SE 2Dr/ SE20 \$1750,/2025. Mac SE/30 2mb Ram 40 HD \$3075. Mac SE/30 5mb Ram 105HD\$3565. Mac IIcx (all models) CALL Mac IIci 5mb Ram 40HD \$4585. Mac IIci 5mb Ram 105HD \$4885. Mac IIfx 8mb Ram 170HD \$7485. Mac IIfx 8mb Ram 330HD \$8350. ImageWriter II \$ 435. HP DeskWriter \$ 799. Sharp JX 300 color scanner \$2975. Microtek 300GS/300Z \$1469/1875 LaserWriter IINT/NTX \$3175/4175 Personal LW. SC/NT \$1485/2475 LaserMax 1000x1000 \$ 7885 QMS 810 turbo \$ 3985. RasterOps ClearVue II \$ 1085. Radius Pivot/2PG \$1288./CALL \* DEALERS & International orders welcome We won't be UNDERSOLD CALL NOW.

2253 Westwood Blvd.L.A.CA90064 Tel: (213) 470-9555 Fax:(213) 470-9457

CIRCLE 219 ON READER SERVICE CARD

### SUPER DEALS ON USED MACS!

 BUY • SELL • TRADE • CALL Mac Classic/LC/IISI (New) Mac IIcx 4/80. \$2975 Mac IIx 4/80-\$3175 Mac Ilci 4/80 . \$3875 ALL MACS (New and used)
 Call for Daily SPECIALS! CALL M.P. - Computer Micro Systems 655 West Evelyn Ave., Suite #2 Mountain View, CA 94041 (415)/968-9026 FAX (415) 968-0509

## DATA ACQUISITION

### **Data Acquisition & Analysis**

Complete hardware and software solutions. Acquisition hardware and software, Analysis software, Signal conditioning modules. A friendly, knowledgeable technical staff can guide you with proven solutions in Medical. Scientific and Engineering Lab environments. Call or write for a free catalog and price list. BIOPAC Systems, Inc.

275 South Orange Ave.-Ste. E Goleta, CA 93117 (805)967-6615

## MacUser Marketplace

To place your ad call (212) 503-5115 or (800) 825-4ADS

## DATA RECOVERY SERVICES



Lost Data from a Quantum. Wren or Seagate Drive? STOP!

Do nothing more until you call us!

We can probably recover your data from non-working drives. Free estimates, reasonable rates, fast turn-around. Don't make it worse... Cive us a call

(816) 478-3999

CIRCLE 220 ON READER SERVICE CARD

Tell Your Source! I Found it in MacUser Marketplace

## **DATA RECOVERY**

Ontrack Data Recovery specializes in recapturing data from any network, microcomputer hard drive or floppy diskette.

> 95% success rate · Fast turn around Expertise with Macintosh-DOS-Novell-OS/2-Unix-Xenix-Bernoulli and more!

Find out why we are the leaders in data recovery - call an Ontrack Data Recovery representative today for more information.

Keeping you in business is our business.

- 1-800-872-2599 -

International: 612-937-5161 · Fax: 612-937-5750

# MAC HARD DRIVE EXPERTS ONESAL WE CAN SAVE IT!

\*Repair \*Recover \*Upgrade

TMS Peripherals offers a complete line of SCSI hard drives for Macintosh computers, from 40MB's to 210MB's, at incredible savings. But we're not just about great prices, we're

about excellent service too! Each TMS drive is completely tested and verified by our technicians before it is shipped.

Nevertheless, should you experience a problem with your drive (within the first 30 days) TMS will ship you a replacement and pick up your drive—at no cost to you, leaving you with virtually no down time! After this grace

period, your TMS Peripherals 2 Year Warranty becomes effective. In the unlikely event that you experience problems, call our Toll-Free Tech Support Line. If your problem persists after thorough troubleshooting by our technical staff—just ship

us your drive and we will send you a replacement unit within

## DISK DRIVES



### TelePort / FAX A300 2400 baud Modem\*

The TelePort modem requires no power supply or serial port! Upgradeable to FAX modem with software.

Modem, \$125 / FAX Modem, \$169 SIMMs\*

1 Meg, \$46 / 4 Meg, \$229 Ilci 64k Fast Cache Card, 259\*



TMS Pro R80 Removable TMS CD ROM (Please, call for prices!)

TMS Pro R45 Removable, \$519\*

(For a limited time only!) 20ms seek time, extra carts \$70 each

## TMS Pro Series Drives\*

Int. Fyt Pro 40 \$249 \$349 12ms Pro 105 499 399 12ms Pro 120 659 759 10ms Pro 170 729 829 10ms Pro 210 899 10ms





48 hours! Standard features include an International Auto-Switching Power Supply, Selectable Pushbutton SCSI ID Switch, 2 SCSI Ports (allowing Daisy Chaining), Shielded Power Supply, VCA Mechanism, 19 MB's of shareware and all necessary hardware. Of course, each drive also comes with TMS Toll-Free Tech Support and our enthusiam for each of our products! For your convenience, we're open 8am-10pm (EDT) 7 days week and all products ship Federal Express. Visa, Master Card, American Express, Optima, C.O.D.'s and P.O.'s accepted. \*All prices subject to change.

TMS Peripherals 1.800.626.MEGS

23123 SW 58th Avenue Boca Raton, Florida 33428-2036 407.482.3821 • FAX: 407.451.9635

CIRCLE 222 ON READER SERVICE CARD

### FOUND A BARGAIN?

Let Your Source Know You Found it in MacUser Marketplace



- All 3.5" Drives are available in zero footprint or micro cabinets as well as internal for tall Mac's
- All 5.25" Drives are available in zero footprint external or as internals for the Mac II, IIx, and IIfx

## Fujitsu 3.5" Drives

3 Year Warranty. \*50,000 Hours MTBF

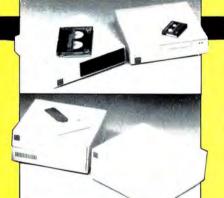
	Int	ternal	External
45 MB	3.5"\$	258	\$328
90 MB	3.5"\$	358	\$458
135 MB	3.5"\$	448	\$548
185 MB	3.5"\$	598	\$698

## Fujitsu 5.25" Drives

5 Year Warranty! \*200,000 Hours MTBF!

		Internal	Externa
357 MB	5.25" Full Hght 16ms	\$1348	\$1448
680 MB	5.25" Full Hght 16ms	\$1748	\$1848
1.2 Gig	5.25" Full Hght 14ms	\$2698	\$2798

\*Mean Time Between Failure is the average life expectancy of a drive. 24 hour factory replacement available for 5.25" drives for additional fee.



## Siemens 525 MB Tape Backup

- •Use two tapes for 1gigabyte
- Fast networkand unattended backup capabilities

\$998

## Wang Dat Tape Backup

- 1.2 Gig .....\$1698
- Fast network and unattended backup capabilities

## **Ricoh Optical**

.....\$2698

Read/write reliable storage

## 1.2 Gig Fujitsu

1.2 Gig......\$2848...\$2948

- 14.5 M.S. access time / 4.8 mbs transfer rate
- 200,000 hours mean time between failure
- · 5 year warranty
- · Incredibly fast!

## 800K Mac Floppy Drive

The Fujitsu External floppy drives have a one year warranty. These are the same drives that retail for \$259!



## MARECT

60 East Chestnut - 145, Chicago, IL 60611 Visa, Mastercard, COD, Telecheck Approved Checks, Gov., Corp., Univ., P.O.s welcome/ New Drives, Factory warranty, / Bracket, cables and software included/ 30 Day MBG

CIRCLE 223 ON READER SERVICE CARD

## **FUJITSU**

## "The world's most reliable drives"

Fujitsu is one of the world's largest manufacturers of hard drives for a good reason: They make the most reliable products available. Hard drives with an incredible mean time between failure that are warranteed for up to five years. All featuring the "zero defect" reliability Fujitsu Mainframe and Super computers are famous for. At MacDirect, we ship hundreds of Fujitsu's 5.25" and 3.5" special Macintosh-version drives every month. So don't let your drive get you down. Order a Fujitsu from MacDirect today.

800-621-8469

Hours: 8:30 - 7:00 CST, Saturdays 10:00 - 4:00

## DISK DRIVES



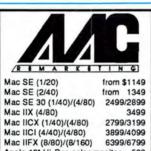
CIRCLE 224 ON READER SERVICE CARD



## DISKETTES



**GENERAL** 



Apple 13" Hi-Res color monitor 599 Apple 21" 2-pg. display 749 Imagewriter II/LQ 369/649 Laserwriter II NT/NTX 2399/3499 Apple Reg./Ext'd. keyboard 89/159

All units: 30-day money-back guaranted
1 YEAR WARRANTY AVAILABLE
Visa & Mastercard accepted
\*Call for price & availability on all Macs
Prices subject to change.

15520 W. High Middlefield, O Refurbished Macs 1-800-288-9288 FAX (216) 632-0448



205 BURLINGTON ROAD . BEDFORD, MA 01730

## **GENERAL**



## FaxPro"-The Network Fax Modem!

FaxPro puts the power of fax into every Mac on your network. Lowers costs and eliminates the headaches of multiple phone \$1199 with FaxProShare " lines and fax boards. Uses your existing AppleTalk, EtherTalk or Phonenet.

Rated BEST by PCWeek (5/28/90).

Features: Background operation-no dedicated Mac Unlimited users on one phone line Automatic cover sheets Phonebook DA Mailing lists Custom overseas dialing Centralized call accounting Available now!

\$1099 FaxPro (for Tops, AppleShare, Novell & 3Com) file sharing software

(800) 292-7771 (408) 746-1590 FAX (408) 746-1593

 $ADD \star ON$ MERICA?

> 433 North Mathilda Avenue nnyvale, CA 94088

CIRCLE 229 ON READER SERVICE CARD

Maya 800-541-2318 AND BES \$39

Chinon \$ 58 CDA-431

CO ROM DRIVES PortaDrive W MS Office NEC CDR 3501 Portable with interface NEC CDR 72 W interface Denon DRD 253 W Shakespear Sherfock Holmes & Audebon Six disc changes speare. \$629 Pioneer DRM-600 six disc changer Toshiba XM3201A Toshiba XM5100A Apple CD SC CD Caddies

Denon DRD 253

§629

**Prometheus** litima 9600 v.32bis v.42bis FAX includes: Cable, Martax & MACKNOWLEDGE

Why buy a used Macintosh

from Maya? • 1 Year parts & labor warranty • 30 day "No Hassie" return

 Toll Free technical support Expert professional repairs

. High quality Maya-tested peripherals & software

The best technology

at an attordable p Save money without sacrificing performance

Maya

Diskettes

Tapes:

Sony Boxed & Branded(10 pac) Bulk .....(50 pac)

HD Diskettes \$1 DS / HD 50 PAC

Chip Art...
Comslock - Photo Vol 2 - Business
Dissimps - Photo Collection
Dissimps - Photo Collection
Image Cub - Artroom
Image Cub - Sarkroom
Image Cub - LetterPress
Image Cub - LetterPress
Image Cub - LetterPress Art & Type Vendor
Macromind
Macromond Integration of the Market Clip Art Sun Media Clip Art Sun NEC Clip Art Sun NEC Clip Art Sun NEC Clip Gallery NEC Clip Art Sun Nec Clip Art Masterpicas Nec Clip Art Masterpicas Negyrata - Clip Art Masterpicas Negyrata - Clip Art Masterpicas

Internal Modems

Hayes 2400 SmartModem for Mac II.
Prometheus Travel Modem 2400 W/Fax.
Prometheus 2400 MNP5 for Mac II or SE.
Ventel 2400 MNP5 Nußlus w/MS Works.

Dove Fax 24/96 Orchid MacFax 9600/9600 Prometheus Maxtax 24/96 with cable, Maxtax Prometheus ProModem 9600M Plus v 32 v 42bis Prometheus ProModem 9600M Plus v 32 v 42bis MNPS/9600FAX

Fax Modems

Call Us:

Mon - Fri till

9:00 pm EDT

Sat till

4:00 pm EDT

**Used** 

Macs

Mac 128k - \$199

Mac 512k - \$249 Ilcx 1mb RAM - \$2559

Ilcx 5mb RAM w/

105mb HD - \$3316

Daystar Digital 50 mHz

PowerCard Ilcx - \$1995

NewLife 1 w/2megs & SCSI - \$199 New Life 25 - 25mHz 68030 Accelerator - \$1075

HD

Ilcx 5mb RAM w/ 200mb HD - \$3778 Farallon Medatrack Multimedia Pack.
Passport - Desknon Music Creatively M.
Passport - The Music Rk.
Voyager - The Music Rk.
Voyager - Desknon Symphony # 9
Voyager - Strandsky Right of Spring
Voyager - Strandsky Right of Spring
Voyager - Strandsky Right of Spring
Voyager - Sprandsky Right of Spring
Voyager - Spring Requirem - Spring Page - Spr General...

Broderbund - Whole Earth Congress National Directory - Wayzata - North American FAX Disc Wayzata - Front Page News

Software

Aicrophone II 3.0 FreeSoft - White Knight Hayes SmartCom II VersaTerm Pro FaxGate for MS Mail & QuickMail

Teleport Plus 1

High Speed Communications ADB Modem/Fax

w/ MNP5 for Data Compression

Education.

CMC ReSearch - 3 Disk Bundle

CMC ReSearch - 5 Sherlock Holmes on Disc.

CMC ReSearch - Sherlock Holmes on Disc.

CMC ReSearch - Multi-Media Birds of American Research - Multi-Media Birds of American Research CAC Research Snakespears and Cac Research Maint-Model Birds of America CAC Research Maint-Model Birds of America CAC Research State State

PD Software... BMUG CD ROM Volume 2 Educato - PD Collection 5.0

External Modems

Wayzata - GEM

GigaRom

Special! with purchase of any other CD ROM title in this ad. GigaRom with

QUANTUM LEAP MacAdemic ...... \$71 \$49 Giga-ROM ......s 99

OnLocation \$150 used with OnLocation to

Abaton InterFax

166

CUSET Group III 9600 bd FAX send/receive in background. Hayes compatible MNP5 2400 bd data, One Year Warranty

Fazilon Timbuktu Remote Access Pack,
Hayes 2400 SmarhModem,
Hayes 2400 SmarhModem 42,
Hayes Ultra SmarhModem 900 wicable,
MicroBorn Machdodem 900 wicable,
MicroBorn Machdodem 900 wicable,
SmarhModem 900 wicable,
SmarhModem 900 wicable,
Telebil Ticol 9500 vi 42 v. 32,
US Robolicis HST y 32 9500 Dual Std. SupraModem 2400 09 \$163

Maya

800-541-2318

235

Here's the Difference

We use what we sell, so we know what technology will fit your needs,

that's what sets Maya apart from other Mac vendors. We are always competitively priced, but we don't push boxes out the door at the lowest price in the market. We don't fry to carry award provided on the market, which we like and the door at the lowest price in the market. We don't try to carry every product on the market, but stock what we like and recommend what we use ourselves throughout our office. We never suggest the most escapeable of elaborate systems of elaborate systems or peripherals of the second of the elaborate systems of elaborate systems are described by the same items new as well serve your sets us apart from all other computer sellers. And we plan to keep it that way.

We're a complete source... for all your system needs.

SyQuest Removables

CARTRIDGES 4 megabyte 10 for \$699



DRIVES with one cartridge

8

cSema loice Express Nubus card... 399 Music Products: Passport
MIDI Interface
MIDI Transport
Mark of the Unicorn
Time Piece MIDI Interface
Professional Composer
Coda Finale MacDrums Perceive
DigiDesign
Audio Media
DECK
MacProteus
Clip Tunes
ectronic Arts Electronic Arts
Deluxe Music Construction Set
Deluxe Recorder Plus
Bogas Productions
Stucio Session
Super Studio Sessions
Brass Disk
Country Del-

Sound Products:

timedia Pack CD

rticulate Systems
Voice Navigator II w/ Microphone
Waves Plus - templates.
Voice Link

Mediatracks Multimedia Pack Voice Recorder MacSema



Sculpt Sound Maya Music MACHINE

Used Mac Ilcx.
5mb RAM w/105mb HD.
Passport MIDI Interface.
Mark of the Unicorn - Performer,
Extended Keyboard, MIDI cables

\$4331

Everything you need ....plug in your MIDI instrument ...and rock on!

Mark of the Unicorn

Performer 3.6

\$434

802-496-6982 802-496-8110 FAX 0120-425-622 TOKYO

COMPANY CONTRACT Waitsfield, Vermont 05673

Country Disk Heavy Metal Disk

String Quartet Disk

More Jams

Sound Effects



**GENERAL** 

## MAC TIME 800-488-0746



			-	40			
PRINTERS		MICE, ETC			CD-ROM		
NEC LC-90	1579	Mousepen A DB	1	82	NEC CDR36w/INTF	499	
NEC LC-290	2395	Roller Mouse		79	NEC CDR72w/INTF	649	
TI PS-17	1395	MVP Mouse ADB	1	37	NEC CD3501w/INTF	389	
TI PS-35	1695	New Turbo Mouse	11	80	Toshiba 3201A	599	
TI XL PS-17	2499	Mac TRAC -ADB	3	74	Toshiba 5100A	429	
TI XL PS-35	2899	MouseTrackball ADB		69	Toshiba Mac Kit	99	
TI Appletalk kit	89	Littlemouse ADB		74	BMUG Vol 1	58	
Diconix M150	395	Datadesk Keyboard	1:	27	Cosmic Osmo	45	
Diconix 4 Color	1049	Kurta 6x9 Tablet	2	79	NEC Type Gallery	245	
Tektronix Color	1829	Kurta 12x17	6	19	NEC 3-D Clip Art	254	
CoStar Label Printer	184	MODEMS			NEC Image Gallery	267	
Seiko Label Printer	195	Hayes 2400	3	45	NEC Photo Gallery	267	
FAX MODEMS		Microcom 9600	6	79	Macromind	124	
VIVA 2400 S	139	PracPeriphrl 9600SA	49	99	MediaTracks	314	
FAXPRO 24/96-S/R	799	Prometheus 2400MII	15	99	MISC		
DOVE 24/96-MII	399	Prometheus 2400SE	20	05	Marathon 030 Acc	519	
Orchid 24/96 S/R	419	Prometheus 9600	68	39	Pagemaker 4.0	489	
Prometheus 24/96 S/R	289	Shiva Net 2400	40	9	Smartform Designer	249	
Prometheus 96/96 S/R	669	Zoom 2400	(	99	At Once!	279	
PromePortabl 24/96 S	199	White Knight S/W	- {	34	NEC MacSync 14*	429	
HI-IECH	OXF Price 2	THIRD STREET ORD, PA 19363 and availability subject to a without notice.			FREE CATALOG SA - MC - APPROVE 2% DISC. FOR PREP	VID.	
O O II O E P 1 3	Draing	THE REAL PROPERTY.	U	HK(	CLE 231 ON READER SERVICE	E GARD	_

all! Call 8am to 10pm ET (Sat. 9 to 5). SAFEWARE, THE INSURANCE AGENCY INC. 2929 N. High Street, P.O. Box 02211

Columbus, OH 43202 (800) 848-3469 (NAT) or (614) 262-0559 (OH)



Microtek 300ZS \$1675

QMS ColorScript Printer \$6685 NEC Silentwriter2 \$1579

\$679

TI Laser PS17/PS35 \$1355/\$1659

\$1989

QMS 410 Top-rated Laser Printer!

Call us for the latest & best prices on Printers, Scanners & Monitors

800-654-3242

NY, NY 10011 212-366-9586

CIRCLE 234 ON READER SERVICE CARD

## **INSURANCE**

### **INSURES YOUR COMPUTER**

SAFEWARE provides full replacement of hardware, media and purchased software. As low as \$49 a year provides comprehensive coverage. Theft, fire, power surge, storms and more. No lists of equipment are needed. One call does it

## ComputerInsurance PLUS

MEMORY UPGRADES

Insure in one easy step! ComputerInsurance PLUS replaces your computer after fire, theft, power surge, natural disasters, including earthquake. Call NOW to receive comprehensive coverage and full replacement.

The ComputerInsurance Agency, Inc. 6150 Old Millersport Rd., NE Pleasantville, OH 43148 (800) 722-0385

Hours: 10 a.m.-6 p.m.

60MB Ext. Drive ScanMan

28ms zero footprint - limited offer \$199

**FULL COLOR PRINT KIT** for Deskiet/Deskwriter

by Inkmun Inks....\$44 Single Color 2-Refill Kits...\$18

VISA/MC • FULL LINE OF SOFTWARE & PERIPHERALS • FAX: (818) 446-1071

CONSUMER COMPUTING

(818) 799-2290

# **Great Mac Buys**

### Computers Mac Plus \$595 Mac Plus 1/40 HD† Mac Plus 2.5/40 HD† \$1095 SE Duo \$895 SE 1/20 \$1095 SE 2.5/20 \$1295 SE 1/20 FDHD \$1195 Mac II 1/40 \$2595 Mac II 4/40 \$2845 Lisa/1Mb RAM/800K 20Mb SCSI HD \$595

†Includes a new Conner internal 40Mb SCSI hard drive 30-Day MoneyHard Drives

Sun SCSI 20 Ext. \$249 Sun SCSI 40 Ext. \$439 External SCSI case only\$124 \$39 400K ext (used) 400K ext. (new) \$59 800K ext. (new) \$159

## **Printers**

Olympia NP60 (new) \$329 Seikosha 2000 AP (new) \$249 Printers are ImageWriter compatible.

## Modems

Star 2400 Baud (new) \$109

## Software

MS Works v2.0 (new) \* \$129 BPI Entry Series\* \$19 Electric Checkbook \* \$19 Business Filevision\* \$25 Focal Point\* \$19 MacNET\* \$19

## Much More ...

Cables • Accessories • Dust Covers • Repair Parts • Manuals • Etc. Our free catalog has it all.

\*Indicates factory packaged software.

**Back Guarantee** 

Reconditioned

90-Day Parts & **Labor Warranty** 



Call for FREE catalog 24 hrs. a day.

Sun Remarketing, Inc. P.O. Box 4059 — Logan, Utah 84321 Fax:801/755-3311

CIRCLE 233 ON READER SERVICE CARD

## **MEMORY UPGRADES** 256K/1MB &

## 4MB SIMMS NTX / FX SIMMS PORTABLE MEMORY

LIFETIME WARRANTY 30 DAY TRIAL LOW PRICES! VISA / MASTERCARD POS ACCEPTED FROM GOVERNMENT, UNIVERSITY & CORPORATE CUSTOMERS



DIVISION OF ROHM CORPORATION 433 N. MATHILDA AVE. SUNNYVALE, CA 94088 (408) 746-1590 FAX (408) 746-1593

800 - 292 - 7771

SIMMS

§48

SyQuest

1 MB FX SIMMS ..... Call 4 MB FX SIMMS ..... Call 4 MB NTX SIMMS ..... Call

Call for volume pricing. Same day shipping for overnight delivery - \$5 Item prices subject to change

## 1-800-848-8967

(206) 236-2009 The LLB Company • Fax (206) 236-1553 1296 E. Mercer Way. • Mercer Island, WA 98040

CIRCLE 236 ON READER SERVICE CARD

## MEMORY/HARD DRIVES Syquest Removable

		INTERNAL	EXTERNAL
SEAGATE	20 MB	\$259	\$339
SEAGATE	30 MB	\$285	\$369
QUANTUM	40 MB	\$333	\$429
QUANTUM	80 MB	\$505	\$599
T.P.	105 MB	\$545	\$639
QUANTUM	170 MB	\$839	\$929
QUANTUN	12 yrs. S	EAGATE 1 Y	r Warranty

Simms - Lifetime Warranty

MEG X 8 SIMM 80ns \$59

\$69

\$69

\$599

1 MEG X 8 SIMM for MAC II FX LASERWRITER NTX

Removable w.cartridge



AXONE Computer Systems, Inc. 60 Chestnut Avenue, Suite 207 Devon, PA 19333

-800-955-0388

24 hr Shipping Open 9 AM-8 PM EST CIRCLE 237 ON READER SERVICE CARD

## **Tell Your Source!**

I Found it in MacUser Marketplace

## **MEMORY UPGRADES**

## BEST PRICES!

## **BEST PRICES!**

## 4 Meg SIMMs 1 Meg SIMMs Mac IIfx SIMMs Mac Portable Ram

Mac Classic Boards Video Ram HP Laserjet Boards Mac IIci Cache Cards

## UPGRADES!

(User-Installable!) 512Ke-Plus \$295 512K-Plus \$575 128K-Plus \$599 800-332-6581

PERIPHERAL OUTLET 314 S. Bdwy • Ada, OK 74820 405-332-6581 • Fax 405-436-2245

Prices subject to change / Visa & MC okay (add 3%)

CIRCLE 238 ON READER SERVICE CARD



Big Life on the Big Screen For The Mac Portable.

Add Video Mac Pac to any Mac Portable and you can use any standard video monitor in addition to the Portable screen. Use with an overhead projector screen for presentations, classes or demonstrations.

Makes any standard single page monochrome monitor very happy. The video driver, which plugs into the expansion slot, supports all common monitors, specifically.

 specifically:
 TTL Full Page
 640 x 860

 TTL EGA
 640 x 350

 TTL Multiscan
 640 x 480

 Standard VGA
 640 x 480

 Super VGA
 800 x 600

 NTSC Composite
 272 x 208

 Overhead Projector Screens

This video circuitry was developed in collaboration with Lapis Technologies.

We design, make and market 256K, 1 meg and 4 meg SIMMs, fx Liberator, Soffstep® memory expansion modules, Pac RAM for the Portable, Video Mac Pac for the Portable, Mac Rescue¹™ and Mac Rescue¹™ Video, upgrade boards for Enhanced 128K & 512K Macs and Mac Stretch for the new Classic. All have a one year warranty. Call today!



Ford Centre, Suite 1180 420 North Fifth St. Minneapolis, MN 55401 (612) 371-0061 (800) 950-CARE (2273) (612) 371-9342 Fax

Computer Care

Dealer Inquiries Welcome. Visa, MC, AMEX, Discover Accepted.

CIRCLE 239 ON READER SERVICE CARD

Whatever team you're on, **MacUser Marketplace** provides the advantage!

Buyers - Quality Products at Good Prices Advertisers - Reach knowledgeable Buyers **Ready to Buy!** For More Information Call **(212) 503-5115** or **(800) 825-4ADS** 



\$295 per Megabyte (1 to 8)

- One to Eight Megabyte All Gold Plated boards • User Upgradable • Built-in Surge Protector
- Uses RAM Slot Not PDS Very Thin 5/8" Max
  Also available for your other Mac's:
- 16 or 32 MB SIMM kit (4 or 8 4 MB/-80 ns) for the Mac II, IIx, IIcx, IIci, IIsi, or IIfx \$895 / \$1790
- 4 MB kit for the IIfx or LaserWriter II NTX \$245
- 3 MB upgrade for the new Mac Classic
   2 MB SIMMs for the Mac IIci and Mac IIsi
   8 MB kit for the new Mac LC or SE/30
   Wisa & M/C Accepted no surcharge

### Shadow Technologies 1767 Morning Glory Road Livermore, CA 94550

(415) 548-0130 CIRCLE 240 ON READER SERVICE CAR

# SIMMS

CALL FOR LOWEST PRICE ON ALL MAC MEMORY

256K, 1MB, 4MB, FX, NTX 256 DIPS,1 MB DIPS, MAC II VIDEO RAMS

LIFETIME WARRANTY MASTER CARD AND VISA 1-800-662-7466 FAX 508-975-5232

## DATÀ MEMORY SYSTEMS

CIRCLE 241 ON READER SERVICE CARD

## MacUser Marketplace

Stand out in a crowd!

Take advantage of

MacUser's new
second and third

Call 1-800-825-4237

color options.

MEMORY UPGRADES

## PERIPHERALS

# **MAC MEMORY**

- 1 MEG Modules
- 4 MEG Modules
- IIfx Modules
- NTX Modules
- SuperStatic 3 Portable Modules MacUser Rated 00000
- New 2 MEG IIsi/ci Modules
- Lifetime Warranty
- 30 Day Money-Back Guarantee!



4030 Braker Lane West Suite 350 Austin, Texas 78759

BEST PRICES!

FREF

INSTALLATION KIT

TOLL-FREE

SUPPORT

YOUR ORDER OR INQUIRY!

CALL OR FAX 1-800-688-7466 FAX# 512-794-8520

CIRCLE 242 ON READER SERVICE CARD

**Tell Your Source!** I Found it in MacUser Marketplace

## PERIPHERALS







## YOUR CANADIAN "MAC ONLY" STORE <u>| -800+66| - | 27</u>

SAM - SPM (MT) CIRCLE 246 ON READER SERVICE CARD

## **PRINTERS**

## APPLE DAISYWHEEL PRINTER

Crisp office typewriter print quality on all MAC's & Apple II's. Fast 40 char/sec speed on 6-part forms. Fixed & proportional spaced fonts incl. legal & foreign language signs on one wheel. Boldface, 198 columns. NEW \$449, RECOND. \$349 includes easy MAC point-&click printer resource & cable. Auto sheetfeeder \$49. Commercial grade with 90-day guarantee. Quality Discount Computers, Inc. 135 Artist View Drive Wellington, NV 89444

## MacUser Marketplace

(702)465-2473 (415)487-8148

To place your ad call (212) 503-5115 or (800) 825-4ADS

## FOUND A BARGAIN?

Let Your Source Know You Found it in

MacUser Marketplace

## **SCANNERS**

## SHARP IS COLOR

JX-100 List: \$995 \$647 8Bit Color Scanner JX-300 List: \$2345 \$1597 **Business Color Scanner** JX-450 List: \$5995 Call Professional Color Scanner

JX-600 List: \$14995 Call Commercial Color Scanner

GPIB List: \$670 \$437 NI-Interface Package W/Cable

Sales and Distribution Computers & Peripherals

## A.I.P.

9427 LURLINE AVE CHATSWORTH, CA 91311 TEL: (818) 882-7034 FAX: (818) 882-7503

CIRCLE 247 ON READER SERVICE CARD

## SOFTWARE/

## ACCOUNTING

## Point of Sale

"The POS System that Apple uses!"



This superior system exceeds all the expected POS features and provides the user with reports to make effective sales and inventory management decisions.

For Product and Reseller information, Call: Ensign Systems, Inc.

(801)546-1616 / Fax:(801)546-6490

### Inventory Management

CIRCLE 248 ON READER SERVICE CARD

### **\$\$\$ INVENTORY-POS \$\$\$**

ORDER ENTRY . ACCOUNTS REC . BAR Code & CASH Drawer Control PROMOS . BILLING MAIL LABELS ● SERIAL #'s ● CUSTOM ...The NEW ShopKeeper-5... CANADA GST-Single \$395 Multi-\$795 SHOPKEEPER PUB. INTN'L, Inc.-SPI 3622 Ocleon Drive

Tallahassee, FL 32312 904/222-8808 USA 800/345-2932 CANADA

## BAR CODE



**Bar Code** 

New!

✓ Type 1

Version 3

PostScript.

Supplements

/ UPC/EAN

✓ UPC/EAN

Bar-Width

Reduction

✓ Font Utility DA

. Code 39 . UPC / EAN . Interleaved 2 of 5 . PostNET prints on ImageWriter, LaserWriter, Imagesetters Bar code readers starting at \$395.

916-622-4640 916-622-4775

"Fasy to use ... we love 'em!" - D.C. Digital Audio Disc. Div. of Sony

## Bear Rock

This is the best product of its kind, and it's reasonably priced too. MacUser, 6:90

MAIL ORDER MANAGER

advertising . Demo \$15

Mendocino, CA 95460 1-(800)-448-0988

National Tele-Press

P.O. Box 79

SuperMOM—a complete database solution for

catalog mail order businesses . Easy order

entry . Invoicing, packing slips, mailing labels.

billing . Inventory Control . A/R . UPS

· Credits/Returns · Commissions & Royalties · Extensive reporting on Inventory, sales,

6069 Enterprise Drive . Diamond Springs, CA 95619

CIRCLE 249 ON READER SERVICE CARD

## BUSINESS

## **BizPowerTools**

BizPlanBuilder<sup>1M</sup> New v.4.0. Intuitive & logical business & marketing plan template on diskette for raising capital. Launching new products or services. 90+ pages of outlines, headines, written texts & ideas... formatted into 33 MacWrite/MSWord files. Sales & marketing oriented—follow tutorials, fill in the blanks, edit into a finished plan. Linked financials in Excel (SYLK). Proven: 23,000+ sold: \$129

"I invented a new construction tool and needed money to build a prototype and launch my busi-ness. An investor wanted to see a business plan. I bought BizPlanBuilder on Monday, wrote it on Tuesday, Wednesday & Thursday; on Saturday he gave me \$45,000.\*\* — M. M., San Diego, CA

Employee Policies Handbook
Plain-English Business Agreements
Equip/Real Estate Investment Analysis
Private Stock Offering raise up to \$1Mil
Limited Partnership Agreement
DealMaker<sup>1M</sup> Business Valuation

Leverage Your Time & Macintosh MC 800/ 442-7373 toll-free ||AN | 800/ 442-1373 worldwide | | 415/ 941-9191 worldwide |

Amex

CIRCLE 250 ON READER SERVICE CARD

ORDER & Manufacturers

INVOICE

MANAGEMENT

Reps Wholesalers Distributors

Customers, Leads, Prospects; Orders; Invoices; Commissions Receivable and Payable; Product Performance; Literature Fulfillment; Activities; Backorders; Custom Reports and charts. No wonder you need CONTROL ITM

800-223-2165



11651 Plano Rd., Ste. 160 Dallas, TX 75243 CIRCLE 251 ON READER SERVICE CARD

## **MacUser Marketplace**

is a special economical section for product and service listings.

Fonts & EPS Utilities for Printing Bar Codes

- POSTNET UPC •
- Code 39 2 of 5 •

All in One Kit: \$179.95

Call ElseWare: \*COOL BIZ\* (206) 547-9623

CIRCLE 252 ON READER SERVICE CARD

## BAR CODE FONTS



- · Generate film masters
- · Runs on Dot Matrix, Laser, or Lino
- \$199.00 for Code 39 or UPC/EAN
- Bar Code Readers from \$399.00
- · 30 day money back guarantee

800-345-4220

417 Ingalls Street . Santa Cruz, CA 95060

## **M**JORTHINGTON

BUSINESS TIME MANAGEMENT

## SMART ALARI

& APPOINTMENT DIARIES™

Personal & Office Scheduling Systems

## Announcing version 3 !!!

The most widely used reminder & calendar system is now easier to use than ever!

- □ Self Installing INIT
- ☐ Auto Backup
- ☐ Turn off Alarms during user selected applications
- ☐ Snooze to 3 hours
- □ Import, Export, & Merge Reminders ☐ Launch Macros
- Add different sounds for each Reminder Set multiple Reminders from Diary

MultiUser Diaries works with TOPS, AppleShare, allShare, or PSN

JAM Software

Voice (415) 663-1041 FAX (415) 663-8217

Int'l Sales: Australia (612) 799-1888 • FAX (612) 799-4042 CIRCLE 253 ON READER SERVICE CARD

CD-ROM





1566 Dictionary of the Living World......\$295.00 A multimedia encyclopedia of the natural world with full motion video, color pictures and sound.



1583 Spaceship Warlock ... .\$89.95

"An epic Sci-Fi adventure!" Amazing 3D graphics.

1381 Virtual Valerie ..\$79.95 1598 SuperStacks ....\$15.00

## EDUCATION

1610 ClassRoom - NEW!..... Educational software for 8 yrs and under, 8 yrs to 12 yrs, and 12 yrs through high-school and college. 1613 Study Room - NEW! ..... Educational: 12 yrs through high-school and college. 1612 R3 - NEW! Educational: 8 yrs to 12 yrs...\$29.95 1614 Kids' Room - NEW! Edu:8 yrs and under\$29.95 1601 PMED Discovery - Environmental data.\$149.00 S1358 Lingua-ROM - 50% off, limited time....\$250.00

Speak French, Spanish, German, Russian, Japanese, Italian, and Chinese, 25 tutors with sound.



CALL FOR A FREE CATALOG!

7434 Trade Street ■ San Diego, CA 92121 ■ Orders: 1-800-843-9497 II Info: 1-619-536-9999 II FAX: 1-619-536-2345

## CO-ROM DRIVES

All drives come with driver software and cables (specify #982 SCSI to SCSI or #981 Mac to SCSI Cable).

1973 NEC CDR-35....\$499.00 1500 millisec.

1972 NEC CDR-72....\$649.00 350 millisec. / 64K buffer

1391 Toshiba XM-3201\$699 350 millisec. / 64K buffer 1981 CD-Tech. Porta Drive ...

...\$599.00 350 millisec. / 64K buffer

1352 Pioneer 6 Disc . 800 millisec. .....\$1395.00

## DRIVE SPECIALS

\$50 OFF the EDUCORP CD-ROM 5.0 with the purchase of any drive!

1931 Chinon CDA-431 \$579 350 millisec. / 32K buffer. Bundled with the EDUCORP CD-ROM 2.0.

P1317 Denon DRD-253 \$599 Shakespeare, Sherlock Holmes, Audubon, and GameRoom are bundled FREE w/purchase! 400 millisec. / 32K buffer.

## NTP



S1581 International Graphics Library ....\$149.00 Over 200 business oriented 24-bit color and grayscale TIFFs created by Emmy award-winning designers.



1585 Ocean Imagery, \$99.00 Over 100 scanned photos covering water sports. scenic ocean views and landscape panoramas. 24-bit color & grayscale.

1330 Clip Art .. 1389 Desktop Publishing ....\$79.95 1359 Sports-ROM ......\$69.95

## MISC.

1300 EDUCORP CD-ROM 5.0 .... \$50 off with the purchase of any

\$50 OFFI CD-ROM drive! A 2-CD set, over 770 megs of the finest Shareware. Upgrades available.

1582 Sound/FX - over 240 sound effects .....\$199.00 1611 GameROOM - over 750 games...... 1327 Exotica ROM 2.0 - Olivia DeBerardinis' art \$199 1587 The Donatelli Portfolios: Lingerie .......\$99.00 20 models in 24-bit color and grayscale.100 photos.

OVER 150 CO-ROMS IN STOCK!

CIRCLE 254 ON READER SERVICE CARD

## uaranteed Lowest Prices CD-ROM Bundle: Drive & 5 discs: NEC CD-ROM Drive • U.S. History on CD-ROM • Birds of America • Shokespeare • Sherlock Holmes • FM Waves Quality Artware \$499

- CD-ROM DRIVES (Gody to run)
  Complete CD-ROM drive kits
  from
  CDI, Denon, Hitochi, NEC & Sony in-stock
  CD-ROM drive kits
  CD Fun House Games, Games
  CD-ROM TILES
  CD Fun House Games, Games
  CD-ROM TILES
  CD Fun House Games, Games
- CD Fun House Garnes, Garnes, Garnesl 34 Spaceship Warfack interactive CD 'movie' 79 Leam to Speak French educational tool 149 Type Gallery PS Adobe Postscript Typefaces 243 Us. History on CD-ROMI07 books 1, 1000 pics 395 Countries of the World text, images, sound 495 ""MORE Over 300 different titles available: "Money back guarantee Free tech support

- Bureau of Electronic Publishing, Inc.

CALL: 800-828-4766 orders only (201) 808-2700 information

CIRCLE 255 ON READER SERVICE CARD

## MacUser Marketplace

To place your ad call (212) 503-5115

or (800) 825-4ADS

## DESKTOP **PUBLISHING**

## FONTSIZER II<sup>tm</sup>

Still the Best! Get rid of SIIII THE BESS! Get rid of the jacgies with the first and the best screen font generator. FontSizer II won't clog up your system like the competition. Order now and solve your screen display problems once and for all. (Laser Printer Required.)

\$99.95

surface UPS

66 tttt 1/2 "

-3/89 MacUser

U.S. MicroLabs Inc. P.O. Box 140767 Austin, Texas 78714 TO ORDER 800-622-2177

CIRCLE 256 ON READER SERVICE CARD

## **EDUCATIONAL**

### THE *ABSOLUTE BEST* IN TESTING!

LXR-TEST" 4.1 is the most advanced and complete testing system available for your Mac!

- Item banking
   Test generation
- · Character styling w/tabs
- Full graphic placement
   Database selection
- Scoring & analysis
   Paper & interactive
   Mark reader support Paper & interactive
   Mark reader support
   Commercial banks
   Spelling checker

- Highest rated software available in various editions to match your testing needs. Fully guaranteed! Pricing from \$149. For complete brochure & free preview disk; call. write. or fax: Logic eXtension Resources

9651-C Business Center Drive Rancho Cucamonga, CA 91730 (714) 980-0046 Fax: (714) 987-8706

CIRCLE 257 ON READER SERVICE CARD

## THE COURSE BUILDER SERIES

Now in 4th release with enhanced features. Visual authoring languages that allow you to create sland-alone courseware for leaching, testing, and training. Powerful built-in features include drawing, painting, animation, voice, music, grading, intelligent branching, video interface, and extensibility, \$10 demo. TELEROBOTIC INTERNATIONAL, INC. 7325 Oakridge Highway, Ste. 104 Knoxville, TN 37921

### Grade Machine™

Gives you FAST full-screen editing of grades. weighted assignments & categories. Style sheets help customize reports. Each class file holds 250 students, 250 assignments, and 10 grading periods. Money-back guarantee. NOT copy-protected! Only \$74.95 + \$3.50 S & H. Mention this ad and SAVE \$10! Misty City Software 10921 129th Place N F

Kirkland, WA 98033 (206) 828-3107

## **EDUCATIONAL**

(615)690-5600

Category continued on the next page.

## **EDUCATIONAL**

### TEACHER'S ROLLBOOK

(213) 326-4246

A complete classroom management tool . Grade averaging and reporting . New quick grade entry . Full attendance records and totals · Records disciplinary actions · Class size reports . Up to 315 students/file . Checked out items . Letters to parents . Requires Mac 512E. 2 Drives • \$99 • Demo \$10 Current Class Productions 22824 Rerendo Avenue Torrance, CA 90502

## **EMULATION**

## **MacEmulate**

·Wvse<sup>™</sup> •Televideo

 Data General Hazeltine ADDS Viewpoint

We emulate the terminals the big guys forgot! MacEmulate is a full featured terminal emulator loaded with lots of advanced features! Call for Free Brochure! \$199 Plus \$4.50 2nd Day Shipping 1-800-327-1829

See us at Brooks #5004

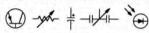
LC 9800 D Topanga Cyn Bl. Ste 280. Chatsworth, CA 91311 818-998-8889 FAX 818-765-2539 MacEmulate<sup>138</sup> © 1990 Cornerstone Data Systems CIRCLE 258 ON READER SERVICE CARD

## **ENGINEERING**

## **ENGINEERING**

## TROPIC SYSTEMS

Electronic Symbol Library for Canvas™ 2.0, 2.1 or MacDraw™ II Over 1300 symbols. All symbols created to conform to the IEEE 315 & 315A standard.



Also available for MacDraw™ II the TTL Symbol Library

Includes Logic Symbols and Pin Diagrams for specific individual IC's. Each Library \$59.00 plus \$5.00 shipping To order send money order or check to:

Tropic Systems
12319 SW 132 Ct., 2nd Fir. Miami. FL. 33186
Specify Canvas<sup>1</sup> 2.0 or MacDraw<sup>1</sup> II version For info call (305) 251-7644 Fax (305) 251-9931

CIRCLE 259 ON READER SERVICE CARD

# CIVIL, STRUCTURAL SURVEYING, DEED PLOTTING

### LANDesign FRAME mac-

- COGO/Surveying

- One-month money-back guarantee. Free support.
  Other programs available for:

Simulations PCB Layout Autorouting

COMPUNeering (416) 738-4601

113 McCabe Crescent Thornhill, Onlario L4J 256 CANADA

Structural Analysis

numerically

Full graphics for structure, loads, axial,

structure, loads, axial, shear, moment, dellect US\$595 plus shipping

CIRCLE 260 ON READER SERVICE CARD

## ENTERTAINMENT/GAMES

Toyogo, Inc.

800 Toyogo-9

Go - meet your NEMESIS™

Go has been a way of life in the Orient for over 4,000 years. As much a philosophy as it is a game. Go is considered by many to be the secret of Japanese success. "the leading Go game for the Macintosh ... Using it is an improvement over learning the game from books or from all but the most patient humans." "This is without question one of the most extraordinary automated aids to go instruction developed. P.O. Box 25460-U, Honolulu, HI 96825-0460, (808) 396-5526

\$79 NEMESIS Go Master, \$49 Joseki Gemus. \$59 Tactical Wizard + \$6.50 S&H

CIRCLE 263 ON READER SERVICE CARD

## **FONTS**

# $\check{\mathbf{s}}\check{\mathbf{s}}\check{s}^{\nu}$ ្រជ័ $\check{\mathbf{a}}\check{\mathbf{c}}$ ន្ត $\check{\mathbf{s}}$ ង្គំន្ធ ការាន្ត្រ $\check{\mathbf{c}}$ ន្ត $\check{\mathbf{c}}$

All world alphabets, custom dvpt.; Type-1 Postscript Fonts All-European IPA VNam Greek Russian ... Georgian Armenian Hindi Sanskrit Bengali Malayal. Tamil Thai Burm. Ethiop. Chess Hebrew Arabic Persian Pashto Mongol. Chinese Japan.Korean Catalog\$5 Ecological Linguistics, Box15156, Wash.DC. 20003

CIRCLE 264 ON READER SERVICE CARD

**GENEALOGY** 

## PostScript<sup>®</sup>Font Software

SAVE UP TO 38% OFF LIST PRICE Authorized Dealer For:

Adobe Bear Rock Bitstream

Casady & Greene Monotype Compugraphic Image Club

### Kingsley ATF Letraset Linotype

OptiFont The Font Co.

PRECISION TYPE 1-800-248-3668 516-543-3636 47 MALL DRIVE, COMMACK, NEW YORK 11725

\*PostScript is a registered trademark of Adobe Systems Inc. CIRCLE 265 ON READER SERVICE CARD

FONTagenix <sup>™</sup> 4 Vol. of bitmap display/text fonts ARTagenix " 5 Vol. of graphics including:

Floral, Child Art, Military Aircraft in bitmap images LASERgenix 6 Vol. of downloadable LASER fonts: Cyrillic, E. European, Text, Cookbook, Fractions, Others

Only \$3950 per volume

Foreign Fonts Edition 22 foreign language bitmap fonts \$6950

## Devonian International Software Company

P.O. Box 2351 • Montclair, CA 91763 (714) 621-0973

All orders add \$3 s/h, CA residents please add 6.75% tax VISA/MC/Check/Money Orders accepted Dealer/Distributor Inquiries Welcome!

CIRCLE 266 ON READER SERVICE CARD

## Call or write for free demos. VAMP Inc. 6753 Selma Los Angeles, CA 90028 213-466-5533

## CIRCLE 261 ON READER SERVICE CARD

McCAD EDS

**Integrated Electronic Design** 

## HOW TO CREATE CONTOURS...

Use ContoursPro to generate 2D survey or 3D surfaces. ContoursPro is compatible with

Schematics

- ·AutoCAD ·Vellum
- Vellum
  Canvas
  MiniCad+
  MacDraw II
  ClarisCAD
- or any program that reads 2D/3D DXF or PICT. Order Today! 301/461-9488 Fax: 301/461-9345 VISA/Mastercard. 30-day money back guarantee \$495.00

**CONTOURSPRO** Paplisoft 8370 Court Acc., Ellicott City, MD 21043

CIRCLE 262 ON READER SERVICE CARD

## **BUY? SELL? HOLD?**

Commodity Investments? Our Stock Watcher " and Wall Street Watcher™ programs help you manage your investments better with professional charting, communications and soon portfolio recordkeeping. Call today for more

Micro Trading Software, Ltd. Wilton, CT 06897-0175

**Tell Your Source!** I Found it in MacUser Marketplace

## FINANCIAL

Worried about your Stock, Mutual Fund or information

1-800-827-7821 or 203-762-7820

## REUNION

the family tree software

MacUser Oct '90

Broom Harvey Smith (1963.)

Reunion quickly records, links, and displays family information and images. Create large, graphic charts, family group records, family histories, indexes, mailing lists, birthday calendars, questionnaires, criteria reports, and more.

Seth Alan Smith, Sr. (1910-1987) & Ireae Lynn Mayborry (1912-) Seth Alan Smith, Jr. (1935) & Mary Elizabeth Twister (1937-) George Thomas Smith (1999-) & Martha Lee Jones (1998-) Sono Robert Smith (1980) Debra Jean Smith (1983-) Sarah Kay Smith (1981-1977)

Call, write, or FAX for brochure & sample charts. LEISTER PRODUCTIONS
14 Hill Blvd., Mechanicsburg, PA 17055 14 Hill Blvd., Mechanicsburg, PA 17055 717-697-1378 — FAX 717-697-4373

### Roots and Branches™

Use this powerful genealogy stack for keeping family records and biographies. Print Pedigree Charts, Family Trees, for everyone. Display and print family groups or individuals. Automatic indexes. Great for reunions, personalized gifts. Low price, great value: \$49.95 + \$5 S/H. Visa and Mastercard accepted.

GSC. Dept M P.O. Box 1113 Fairfield, IA 52556 Phone: (515) 472-6461

## GRAPHICS

Category begins on the next page.

## **GRAPHICS**

Defense graphics library designed for industry professionals and military buffs. Call for FREE brochure. V/MC/PO's/COD-PAINT • HYPERCARD • PICT • EPSF

302-234-1098

NOVA Cube 14 Jarrell Farms Newark DE 19711

# Presentation Quality Clip Art



World . Continents . Countries . USA by County EPS · PICT · MacPaint · For information call:

800-334-4291

CIRCLE 268 ON READER SERVICE CARD

## HEALTH

## **NUTRITION SOFTWARE - \$3!**

 MENU PLANNER EDH (food analyzer) WEIGHT LOSS PLANNER

Each has sold more than 100,000 copies! No catch-complete programs, no additional obligations, not shareware or public domain. SATISFACTION GUARANTEED. Add \$3 per order s/h.

Ohio Distinctive Software, Inc. 4588 Kenny Rd. Columbus, OH 43220

## MacUser Marketplace

To place your ad call (212) 503-5115 or (800) 825-4ADS

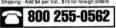
## Clip Art for Advertising





LOGOS & TRADEMARKS, 1, 2, & 3 S99EA

INT'I SYMBOLS & ICONS. 1



41 Marsfield Avenue • Essex Junction, VT 85452 Innovation Advertising & Design

CIRCLE 269 ON READER SERVICE CARD

NATIVE AMERICAN & SOUTHWEST Images, Ancient to Modern Designs. Paint format. 500 ILLUSTRATIONS and 140 BORDERS on 3 DISKS! Includes Artisto+ DA. Prompt Delivery. Check, PO.

Ordering & Information: (505) 982-1562 -800-245-7824

RT GRAPHICS \$79.95 2257 Calle Cacique, Santa Fe, NM 87505

CIRCLE 270 ON READER SERVICE CARD

## LANGUAGE TOOLS

## NEW!! 68000, COP800, PIC16Cxx

versions!

 $\mu ASM^{\scriptscriptstyle TM} \quad \begin{array}{ll} \text{Cross Assemblers} \\ \text{for the Macintosh}^{\scriptscriptstyle TM} \end{array}$ 

-TEXT EDITOR, CROSSMACRO ASSEMBLER, AND COMMUNICATIONS FACILITY IN A COMPLETE INTEGRATED DEVELOPMENT ENVIRONMENT S OR HEX FILE OUTPUT DOWNLOADS TO MOST EPROM PROGRAMMERS

AVAILABLE FOR MOST 8-BIT MICROPROCESSORS AND 68000.010. CALL OR WRITE FOR TECHNICAL BULLETIN. 30 DAY MONEY BACK GUARANTEE. MC/V/AE.

Micro Dialects, Inc DEPT. MU, PO BOX 30014 CINCINNATI, OH 45230 (513) 271-9100

CIRCLE 271 ON READER

## LOTTERY

### MacLotto # All Lottos, All Kenos, All Mac's Dramatic Odds Improvements!!! ncreases Your Expected Return Jackpot Wagering Strategizer™

Respects YOUR Budget!! On Screen Bet Slip Graphics! Fast, Accurate Bet Placement! Finds and Pinpoints all Winners Based on OUR Patent #4,712,796



Canadian Woman Hits BIG in Lotto 6/49 - Canadian Woman Hits Bits in Lotto 6/49
- Michigan Judge Hits 5/6 for \$2,500.00 !!
- Conn. Teacher Wins \$7,335 - 1st Time!!
\$99 US Math Labs,18 Main St Concord, Ma. 01742
- FAX 508-653-9193 Direct 617-431-5922
MC/VISA 800-PLAY-SIX

FREE! With Order. 30 Page - MacLottos
 Lottery PRIMER Book!
 3 Months of Lottery
 Players Magazine
 Complete MacLottos
 Guided Tour on Disk!!

CIRCLE 276 ON READER SERVICE CARE

## MEDICAL/DENTAL

## MediSearch™

Communications/research software to access NLM's MEDLINE directly with a powerful Mac interface that saves time and money. Easy to learn features for both new and sophisticated Medline users. Formats into retrieved for word processors, EndNote ", and FileMaker" \$149 PO/MC/VISA

Shoestring Solutions 402 Cortland Ave. San Francisco, CA 94110 1(800) 333-9462

## MacUser Marketplace

is a special economical section for product and service listings.

## MUSIC/MIDI



-MacUser Magazine, August 1990

- Teaches intervals, chords, melody, rhythm Interactive staff notation Saves scores
- •Includes textbook •Beginners to advanced

\$125.00 • Call Toll Free 800-445-4866

ARS NOVA BOX 637, KIRKLAND, WA 98083

## MUSIC/MIDI

## SAVEO

## Digital Audio for your Mac II!

Audiomedia \$699 Deck MacProteus \$699

StudioVision \$749

1-800-465-MIDI In Canada 1-416-928-MIDI

Now you can give your Mac II 16-bit, CD-quality stereo sound with these powerful new production tools from Digidesign & Opcode. Call for details!

CIRCLE 273 ON READER SERVICE CARD

CALL NOW!...Special Pricing on Digidesign, Coda, Dr.T's, Mark of the Unicorn, Opcode, Passport, Roland Instruments, & more... FREE CATALOG! 1-800-MAC-BEAT 1-505-988-1710

CIRCLE 274 ON READER SERVICE CARD

# Adventures in TM MUSICLAND

Based on Alice in Wonderland, Adventures is a unique and delightful collection of 4 musical games and puzzles for children of all ages and abilities! You and puzzles for children of all ages and continued to be a musician, but as you play, your don't need to be a musician, but as you play, your and composers will develop. Adventures in Musicland entertains, makes you smile, and teaches you about music.

CIRCLE 275 ON READER SERVICE CARD

Dr.T's Music Software 100 Crescent Rd. Needham, MA 02194 (617) 455-1454 Only \$79

## PRINT DRIVERS **SPOOLERS**

## New.. Unique Powerful!

## MacJet-

From the company that invented the QuickDraw laserPrinte

Use any HP (or compatible) laser printer with the Macintosh!

Convert TYPE I Fonts into HP SoftFonts Prints faster than Apple's LaserWriter Print COLOR as Grayscale

ctory price \$99.95

COMPUTER:applications, Inc. (919) 846-1411

CIRCLE 277 ON READER SERVICE CARD

## PUBLIC DOMAIN

## SOFTSHOPPE, INC.

ASP Member

- Selected Programs
- □ Latest Versions
- ☑ As Low as \$2.50

## **FREE CATALOG** MAC PD/SHAREWARE

POB 3678, Ann Arbor, MI 48106

Call 800-829-BEST (2378) or 313-761-7638 Fax 313-761-7639

CIRCLE 278 ON READER SERVICE CARD

## SHAREWARE

## FREE - 6 DISKS FULL OF SOFTWARE

TRY US! Get our best selling NO VIRUS software for MACINTOSH® COMPUTERS. Business for home and office, Desktop publishing, Utilities, Games, Finance & Education, Credit cards only! PAY ONLY \$5.00 SHIPPING/HANDLING

SATISFACTION GUARANTEED

## SMC SOFTWARE PUBLISHERS 619 931-8111

CIRCLE 279 ON READER SERVICE CARD

## STACKWARE

HYPER TOOLS® VERSION 2.0 ALL NEW TOOLS!



Huntington, CT 06484 (203)926-1116

HyperTools® #1 & #2 are the HyperCard® tools of choice by thousands of users! Version 2 includes 2 toolkits each with 16 unique tools, tool selection palette, one-time installation, independent tool windows, plus special HyperCard 2.0 features! Just \$99.95 each!

HyperTools® #1: cursor editor & animator; group tools (move objects/data to other cards/bgs/stacks); cross reference & info tools; alignment, font, size, style, ordering, & array tools for fields & buttons; show hidden items; button tools for radio button/checkbox groups; performance, resource & preference tools.

HyperTools®#2: airbrush, pattern mover, rulers, FKEYs, protractor, color windows, special effects & object hiliter; size tool; field sorting, validation, formatting & pop-up choice lists; order, sort & scan cards.

CIRCLE 280 ON READER SERVICE CARD

## Expand your vocabulary in: CZECH FRENCH SPANISH RUSSIAN LATIN

Over 2000 words/1000 foreign synonyms. Complete, accurate translations and thousands of English synonyms! MacFlash Cards get you to the intermediate vocabulary level FAST.

Compare our prices & SAVE! FREE technical hotline number. German I/II, French I/II, Spanish I/II, Russian I/II, Czech I, Latin I: \$25 each. S&H \$4.50. CA res add 7%. Call or send for free brochure. Order now. 800-622-3574 (800-MAC-FLSH)

The Language Quest Software Company Same Day Shipping 101 First Street, Suite 428, Los Altos, CA 94022 2 working days to your

CIRCLE 281 ON READER SERVICE CARD

## MISCELLANEOUS/ACCESSORIES

## MAC FREIGHTERS

The Best Deluxe Shipping Cases "Super Strong" made of steel, aluminum & ABS. The Ultimate airline check in or shipping containers

### WHOLESALE PRICES

In stock - same day shipping Custom cases made to order Accept VISA, Mastercard, Company PO's



MicroOvernight Inc. For more information call: 1-800-228-7042 CIRCLE 282 ON READER SERVICE CARD

## COMPUCOVER® COVER YOUR INVESTMENT



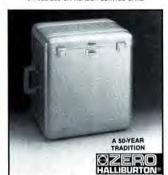
Keyskin "Keyboard Covers Clear to the eye and soft to the touch. KeySkin W Keyboard Covers stay on 24 hours a day, protecting against spills and dust, while you use your computer.

### Computer Dust Covers

Spill Proof!! Static Proof!! Our Stylishly litted Dust Covers will lonk good on your computer and give maximum protection from dust and spills. Available in Nylon or Clear Plastic.

USA (800) 874-6391 (904) 862-4448 2104 Lewis Turner Blvd. (Dept. MU) Fort Walton Beach, FL 32548

CIRCLE 283 ON READER SERVICE CARD



## The Best Case Scenario Airline Check-in or Local Use

Zero Halliburton Aluminum Mac Cases: Lightweight, Durable, Distinctive Styling CLASSIC/Plus/SE Ilcx/ci Ilsi LC Ilx/fx Portable Attaches Monitor & Printer Cases

from \$299.95 1-800-542-4591 1-213-578-9710 TCC 13101 Wash. Blvd., #110, L.A. CA 90066

CIRCLE 284 ON READER SERVICE CARD

### COMPUTER DUST COVERS

Highest Quality/Fabric/Custom-Fit! · Gray, Tan, Royal, Brown, Navy & Red

- . Durable & Attractive . Wash & Dry!
- · MAC, Apple, IBM, Compaq and more!
- · Custom covers to your specs at no extra \$
- · Monogram/Silk-screen · Call for info!
- · 100% Satisfaction Guarantee, since 1983! CO-DU-CO Computer Dust Covers 4802 W. Wisconsin Ave. Milwaukee, WI 53208

1 (800) 735-1584, 1 (414) 476-1584

## DATA CONVERSION SERVICES

# WE CAN CONVERT DATAFILES TO/FROM OVER 1,500+ SYSTEMS IN VIRTUALLY ANY FORMAT! — ON DISKS OR TAPES!

## Systems like: • Mainframes

- Minis
- Processors

  Typesetters, etc. Microcomputers
- Formats like:

   MacWrite\*

   Microsoft Word\*/Works\*
- Jazz\*
   Excel\*
   Tab-delimited ASCII, etc. • 4th Dimension\*
- CompuData Translators, Inc.

Dedicated Word

FileMaker

## 3345 Wilshire Blvd. Ste. 407

Los Angeles, CA 90010

800/825-8251 • 213/387-4477

CIRCLE 285 ON READER SERVICE CARD

## TAPE/DISK CONVERSIONS

Conversion services for your MacIntosh to over 3000 computer systems. Capabilities include converting to or from:

Magtapes 'Mini & Micro Computers

\* Word Processors \*Typesetters

Data can be supplied in over 450 software packages. OCR scanning also available. Pivar Computing Services, Inc. #MU 165 Arlington Heights Rd. Buffalo Grove, IL 60089 800-CONVERT

## DESKTOP **PUBLISHING** SERVICES

## WE CHALLENGE YOU . .

To find a service bureau that provides biob resolution PostScript output with lower prices and a money-back guarantee. How about a service bureau that has: unparalleled volume discounts, 1-day turnaround, 24-hour modem transfer (38.4k), and free technical support? Think smart, choose:

ICONS & IMAGES™ P.O. Box 434 Greenwich, CT 06836 (800) 869-9059, (203) 661-4469

DESKTOP PUBLISHING SERVICES

## SERVICES

## COLOUR POSTERS

- PC Mac Unix etc.
- Postscript formats
- Most vector & raster
- 42 in. X 12 ft., 400 dpi Signage, Murals
- · Large illustrations
- Large renderings
- Courtroom displays

CIRCLE 286 ON READER SERVICE CAR

24 hr,19.2k Baud BBS
 Architectural

digital Prism Inc.

636 El Camino Real San Carlos, CA 94070

(415) 508-8800

Do you still buy loose color separations and pay again to have them stripped into your 'Lino' outputs? Or do you dream of 30"x40" film output of your Illustrator or Freehand Files? If so, give us a call! We offer Crosfield's StudioLink, 3 Crosfield scanners and 3 Studio Systems. High resolution scans made on our scanners are placed into your Mac designed page-all copy and EPS files you created are brought into our Studio Systems via StudioLink. We merge the scans with your page plan, and output to film on our Laser expose units. Registration and screen rulings are not a problem. Call or write for your MacUser information packet. Phone 207-453-4971 Fax 207-453-7156.

Graphic Color Service, Inc., 26 Sheridan Drive, Fairfield, ME 04937

CIRCLE 287 ON READER SERVICE CARD

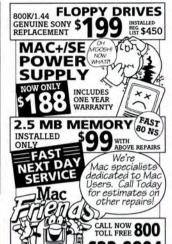
## **MAC REPAIR**

- Apple™ Certified Technicians
- One-Day Service Turnaround\*
  - Hard Disk Repair & Data Recovery Up to 75% below Dealer Rates
- Component-Level Repairs
- Advice and Price Quotes by Phone
- Power Supplies & Logic Boards
- Fix-It-Once Lifetime Repair Warranty

\*on many repairs. Visa/MC/AX. Fast overnight hipping available. We use genuine Apple™ parts.

## 1-800-MAC-SHOP

CIRCLE 290 ON READER SERVICE CARD



CIRCLE 291 ON READER SERVICE CARD

## PostScript Output: Reflex or Film

FREE quality control sheet. Lowest Prices in USA. 24 Hr. Auto Modem Service or send Disk or HD \$6.95 to \$2.20 pp for 1800 DPI, discounts on 2nd page - Film add \$3. Graphics or Text same \$. 150 L/S perfect. We also do color separations, color scans & corrections with Cromalin Proofs. Office hrs. 9am to 11pm. **ENTERGRAPHICS** 

RR1 356A Salt Pt. Turnpike Poughkeepsie, NY 12601 (800) 473-4108, modem (914) 473-5719

## MacUser Marketplace

To place your ad call (212) 503-5115 or

(800) 825-4ADS

DISKETTE COPY

# Ergonomic **Space Saving** Strong ups

**FURNITURE** 

CIRCLE 289 ON READER SERVICE CARD

# **SERVICES**

## **DUPLICATION FROM \$.99** HIGHEST QUALITY MEDIA

Macintosh 3.5" DS/DD duplication starts at just \$.99. Prices go even lower as you continue to order!

- Duplication + 100% Verification
- Custom Labels/Sleeves/Mailers
  Custom Packaging & Assembly
  Colored Media Available
  Special Rates For Demo
- Software & Site Licensing Educational Discounts Available 24 Hour Turn-Around Guaranteed Products

## 800-255-3142

Diversified Systems Group, Inc. PO Box 1114, Issaquah WA 98027

CIRCLE 288 ON READER SERVICE CARD

## MacUser Marketplace

Stand out in a crowd! Take advantage of MacUser's new second and third color options.

> Call 1-800-825-4237

## **INSURANCE**

### What happens after the warranty runs out?

Simple. You're the one that pays for repairs. Unless you have extra cash to repair or replace your computer system, you need SAFEWARE FIX:IT. Be insured for mechanical breakdown (wear and lear) as well as external losses (theft, fire, power surges, natural disasters and more). A single insurance policy covers all your equipment for as little as \$100. Call for Free Brochure: 1-800-822-2345

SAFEWARE, The Insurance Agency, Inc. 2929 N. High Street, P.O. Box 02211 Columbus, Ohio 43202 (614) 262-0708 Local, FAX 614-262-1714

## Don't Let Your **Buyers** Down!

Be There For Them Every Issue: Issue Closing Dates For: June 1991 -3/18 July 1991 -4/15 August 1991 -5/20 Call Your Account Managers Today!

SLIDE IMAGING SERVICES

# SUPPLIES

Carron PC Copiess CONNECTION 1-800-253-0956

→ \$32.<sup>∞</sup> + shipping Cartridges are completely taken apart, inspected, tested, and seeled before you them. 100% Guaranteed, 30% more to print. APPPLE, CANON, HP, Q

daries print APPPLE, CANON, HE

\$72.00 + shipping

(Pro-paided)

Brand new Ca/Six toner cartidges straight for
manufacturer APPPLE, CANON, HE Qube, see

Bocause of trendous demand of the cartidges. use of teemdous demand plosse call for pre-p serve your cader. It pays and saves to think a

CIRCLE 296 ON READER SERVICE CARD

## Canon Color Laser Copies Now Available!

Overheads, Prints, Dupes, 4x5 Transparencies, Scanning, Imagesetting

Slidemasters, Inc. 800/969-8228 Voice Phone 800/486-9998 Mac Modem from

CIRCLE 292 ON READER SERVICE CARD

## P.C. Copier & Laser Printer Owners



COMPANY UPS To: 6827 S. Broadway St. Louis, MO

TONER

SERVICE

New Drums Available - Call Ricoh Engine Toner \$49.95/Case Deskjet Refills - \$18.99/Twin Pack (314) 352-8667

800-88-TONER

QUANTITY DISCOUNTS AVAILABLE CIRCLE 297 ON READER SERVICE CARD

## FOUND A BARGAIN?

Let Your Source Know You Found it in

MacUser Marketplace

## Slides From Your MAC

All major Mac/PC packages! POSTSCRIPT SLIDES!

Adobe fonts

— free technical support

4k & 8k resolutions

24/48 hour service

We want your business. And we'll prove it! We offer the best service available. Experts in Persuasion, Powerpoint and others, on staff to serve you. Free Federal Express ship-ping. Toll-free Customer Service. And if you should make a mistake, we'll reshoot your slides, free. Call today, and say "I'd like to try your service. Free.

1-800-222-2592 Accent Presentations, Inc.

12780 High Bluff Drive, Ste. 250 . San Diego, CA 92130



\$10 PostScript Slides (24 hr service)

\$5 Non-PostScript imaging & volume discounts available

CIRCLE 293 ON READER SERVICE CARD

## ideImagers



Slides Overheads Color Prints

All Major Mac and PC Packages

- 24-Hour Turnaround
- Free Technical Support4K Resolution
- Volume \$ Discounts
   Free Fed-X (25 Slides Min.)

1-800-232-5411 Atlanta GA

CIRCLE 294 ON READER SERVICE CARD

## Great **Performances**



## **Demand an Encore**

Let us take your article to its highest level of marketing potential with a reprint!

To find out how you can have your article or review elegantly reprinted\*\* on 80 lb. paper stock, in 4-color, 2-color or 1-color, call or write today:

Claudia Hardison-Reprints Manager; Ziff-Davis Publishing Company, One Park Avenue, New York, NY 10016, 212-503-5447.

\*\*Minimum quantity 500 reprints.

## SUPPLIES



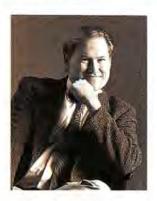
DARKER PRINT
 100% GUARANTEED

We buy empties call for brochure Willow Products Corp. 3857 Willow Ave, Pgh, PA 15234 800-426-8196



CIRCLE 295 ON READER SERVICE CARD

# Let's Spell Mac B-o-r-i-n-g



The Mac world has come to mean big-ticket applications for such things as multimedia, prepress, and animation that most of us will never use. What's left? Not much.



hat's happened to the world of the Macintosh? It's become more boring than that of the PC. The Macworld Expo in San Francisco last January closed the lid on the coffin. Everywhere you looked, you saw expensive multimedia applications, pricey typesetting engines, \$5,000 monitors. For sure, this stuff makes the Mac a powerful tool for dubious video applications and special applications such as prepress and color separations. So what? I thought spreadsheets were boring. Let's talk megaboring and discuss color separations.

This is the new direction for the Mac boring high-end applications for specialists. This is partly the fault of Apple's marketing and strategic-planning departments. Although Apple rolled out three inexpensive Macs to rekindle interest from the "rest of us," it made the move too late to prevent this dangerous turn in direction. It may be too late to prevent a turn in overall public perception.

The irony is that Apple is rumored to have 150,000, maybe more, Mac Classics backordered. One showgoer told me he felt sorry for any newcomer to the Mac who attended the Macworld Expo. "Can you imagine some poor schmuck coming to this jammed show and finding that if he wanted to do anything with the Mac, it would cost a fortune!?!"

Even typesetting companies were there showing equipment that costs tens of thousands of dollars. There is nothing exciting about any of this.

Perhaps the Mac has run its course. Its word processors can go no further without turning into desktop-publishing programs that are time-consuming and useful only if you're doing a book or laying out an ad. How many people need this capability? The painting programs have gone as far as they can go. When Radius and the rest of the monitor sellers went to 24-bit color, they hit a brick wall. What next? Have you looked at any of these super-duper painting programs? If you're a professional artist, you'll find them useful. They do everything, especially if you devote your life to them. But how about the rest of us?

It gets worse. There's the dreadfully boring multimedia. I went to a hotel suite and saw videotapes of staid, overproduced, superslick promotions made for corporate clients - the kind of boring, boring video presentations you see at every trade show. Someone is sitting in front of a textured background jabbering about how "when our company

switched to Hechstone Electro-Crappers in the bathrooms, employee morale improved dramatically."

A deep voice-over tells the Hechstone story while the video shows all sorts of special effects - such as flying toilets - to accent the imagery. Gads. "It costs us \$1,000 to produce this tape, and we charged the client \$30,000, and they were glad to pay it," I was told. "This is what multimedia is all about." the man said.

Of course there was only one guy in the company who could make the multimedia engine do all this fancy footwork. And it took special boards and more fancy footwork to get an NTSC master tape out of the Mac. It saved money, but it was boring. The application is boring. The tapes were boring.

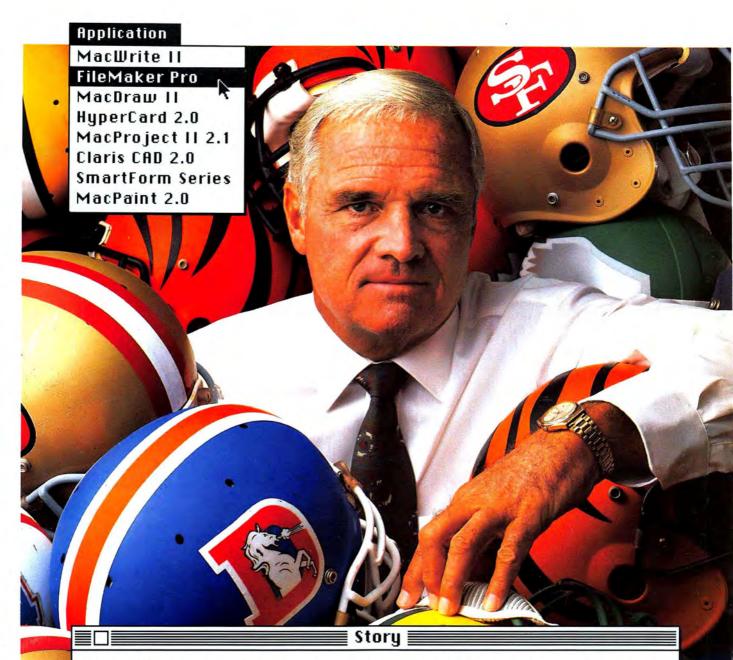
This brings me to another boring type of application that flooded the show and seems to be flooding the pages of Mac magazines: animation programs. Maybe it's just me, but I don't get too excited about animation programs anymore. The first couple I saw I thought were interesting, until I realized I don't want to be an animator.

How many people would ever use an animation program? Not many. Maybe some professional animators and some bored high school kids. That's about it.

Personally, I don't much care. I'd rather job out animation than do it myself. Maybe animation programs help some animators someplace. Maybe they charge less money now. But I doubt it, given the \$30,000-andhappy-to-pay gouge those industrial types took for the boring video I just mentioned. Whatever's the case, I'm sure not going to invest the time to learn any of the dozens of animation programs out there.

I've yet to see an animation program that really uses the computer's power. I want one that I can just tell what to do, "Draw a Donald Duck. Draw a red fire hydrant. Have the duck walk to the hydrant. Have him pull it up and throw it to his left." That kind of thing. But why would I want to do this anyway? Again, I'm not an animator. I don't think I'll ever become one. It's boring.

I'm scared this isn't a phase but a trend the Mac as a humdrum device used to help animators or typesetters or makers of industrial videos. If the enthusiasm dies, so will the Mac. All these applications lack magic, and most can be done on a PC. This doesn't look very exciting to me.



## He hunts heads with a single piece of software.



Mike Giddings has the power to move the football. His ratings reports are studied by 12 NFL teams several times a year.

back you see inserted into the line-up mid-season came from one of Mike's reports.

More than 5,000 players are rated using dozens of criteria. There are hundreds of thousands of pieces of information in all.

How does Mike handle all this? And publish dozens of reports a year? With a staff of three?

With a single piece of database software called FileMaker® Pro.

With it, he can analyze data to a remarkable

degree. FileMaker looks for certain attributes in a player's performance, weighs them, calculates performance, and displays the rankings in 200 different formats that Mike publishes for his clients. And he can do all this without computer expertise. He's a former coach, not a hacker.

Mike's reports give coaches an edge.

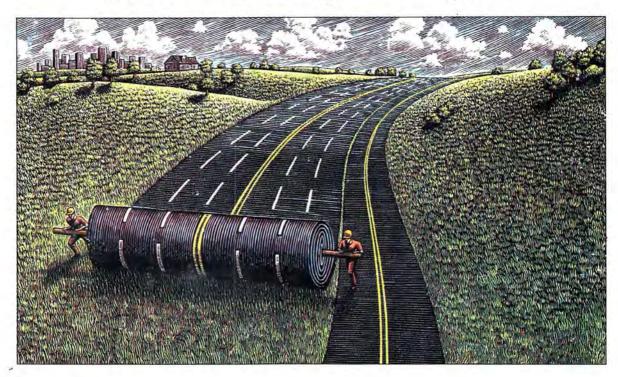
With FileMaker Pro, Mike has an edge, too.

Mike Giddings is just one of over a quarter-million people who benefit from FileMaker. You can, too. To see how, call 1-800-729-2292, ext. 20.

CLARIS

In Canada, call 1-800-668-8948, ext. 48. ©1991 Claris Corporation. All rights reserved. Claris, FileMaker, MacDraw, MacPaint, MacProject, MacWrite and SmartForm are registered trademarks of Claris Corporation. HyperCard is a registered trademark of Apple Computer, Inc., licensed to Claris Corporation.

# Why installing Ethernet doesn't have to mean scrapping the network you've got.



Would you scrap a whole highway system just because a few sections got crowded? Of course not—you'd *expand* by adding lanes. For a dramatic increase in carrying capacity and speed.

That's the principle behind Farallon's PhoneNET® twisted-pair Ethernet. We take you into Ethernet painlessly and at a low cost, by leaving your LocalTalk network in place. And by letting you install Ethernet at your own pace, starting with the nodes that need more bandwidth now, to do power tasks.

### The PhoneNET StarController EN

The heart of the network is the StarController® EN, an active star hub that comes with free StarCommand® 2.0 network management software. StarCommand will let you manage the entire Ethernet/LocalTalk internet right from your desktop.

## The PhoneNET Card for Ethernet

To upgrade a station from LocalTalk to Ethernet, you'll simply add our highly reliable PhoneNET® Card for Ethernet and switch the wiring in your telephone closet. It's an instant, cost-effective Ethernet upgrade path.

Included free with every Ethernet card is our Timbuktu® software, a \$149 value and a superb tool for node-level management.

## Based on the 10BASE-T Standard

Compliance with the 10 Mbps 10BASE-T Ethernet standard will keep your PhoneNET EN network viable long into the future. And throughout its years of use, you'll benefit from the reliability Farallon products are known for. Reliability that has made us the leader in twisted-pair networks—with over 1.5 million nodes installed.

The Farallon Ethernet solution is the most complete one available. It includes our hub and Ethernet card, plus our Ethernet/LocalTalk software router, PhoneNET Liaison. Our StarConnector EN converts existing Ethernet cards—with AUI or Apple Ethernet ports—to 10BASE-T.

Think about it. Do you really want to scrap a whole



highway system just because a few areas have heavy traffic? Call (415) 596-9000 today for a complete PhoneNET Ethernet data sheet and the name of the Farallon reseller near you.



For twisted-pair Ethernet

